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An Informal Meeting of the Guild of Gas Managers.

An informal meeting of the Guild of Gas Managers will be held at the works of the Pawtucket Gas Light Company, of Pawtucket, R. I., on Wednesday, May 7th. We are authorized to state that any of the gas fraternity who care to visit Pawtucket on that date will be made heartily welcome.

[OFFICIAL NOTICE.]

Postponement of the Annual Meeting of the Central New York Gas Engineers Association.

SYRACUSE, NEW YORK, April 27, 1884.

The Fifth Annual Meeting of the Central New York Gas Engineers Association will be held at Corning, N. Y., on

THURSDAY, JUNE 5TH, 1884,

instead of on May 22d, as previously announced in the JOURNAL of April 16. Active membership in the Association is open to any person interested in gas manufacture in Central and Western New York, and all such are invited to join. A cordial invitation to members of other associations to be present at the meeting is hereby extended. W. A. WOOD, *Secretary.*

[OFFICIAL NOTICE.]

Annual Meeting of the Western Gas Association.

SECRETARY'S OFFICE, WESTERN GAS ASSOCIATION,
QUINCY, ILLS., April 24, 1884.

The Seventh Annual Meeting of the Western Gas Association will be held at St. Louis, Mo., on the 14th, 15th, and 16th days of May. The Southern Hotel has been chosen for our entertainment, and the rates will be as follows: $3.50 per day for outside, and $3 for interior rooms; a material concession from the regular rates charged at the Southern.

The Secretary regrets that he cannot announce a complete list of the papers that will be presented, owing to the delay of a few of the authors in informing him of the subjects they had chosen. So far as heard from, however, the titles of the papers to be presented, together with the names of the authors, are as follows:

"The Construction and Efficiency of the Washer-Scrubber at the Works of the Cleveland (Ohio) Gas Light and Coke Company," by Mr. G. A. Hyde.

"The Manufacture of Sulphate of Ammonia," by Mr. James Somerville.

"Photometry," by Mr. B. E. Chollar.

"Wooden Pipes for Gas Mains," by Mr. J. G. Miller.

"Does it Pay to Observe Strict Rules of Order and System in the Management of Gas Works," by Mr. Thos. A. Bates.

"Small Gas Works, and the Pelouze and Audouin Condenser," by Mr. James R. Smedberg.

"Gas Fitting," by Mr. Geo. B. Burns.

"The Relations of Chemistry and Physics to the Manufacture and Use of Gas for Illuminating Purposes," by Prof. S. H. Douglas.

"The Future of Gas and the Gas of the Future," by Mr. Edward Lindsley.

"New Uses of Ammonia," by Mr. Geo. Shepard Page.

Blank forms of application will be forwarded to those who will inform the Secretary of their desire to become members of our organization.

Members of kindred associations are cordially invited to be present, and they can rest assured that a fraternal welcome will be extended to them, each and every one. A. W. LITTLETON, Secretary.

[Now all that remains for the members of the Western Gas Association to accomplish, is for them to reward by their presence at the St. Louis meeting, the zealous efforts of their untiring Secretary.—ED.]

CONSIDERING THINGS OF INTEREST RELATING TO BROOKLYN, N. Y.

At a regular weekly meeting of the Common Council of the city of Brooklyn, N. Y., held on Monday, April 21, a petition, signed by a number of prominent business men, was presented and read. The petitioners requested that the Common Council take immediate steps towards granting some one of the numerous applicants now before the municipal body the privilege of using the streets for the purpose of stringing wires, to the end that a supply of electricity might be conveyed to those desirous of using the same. Electric lighting speculators are evidently of the opinion that Brooklyn presents a likely field for their operations, judging from the fact that no less than a dozen different companies have petitioned the Council for rights and privileges, and their ardor does not seem to diminish in any degree, despite the seemingly cold neglect hitherto displayed by the aldermanic body in granting any one of the respective electric lighting bodies the official sanction necessary to make a legal beginning. But consequently none of the applicants can accuse the Council of undue favoritism; and, be the motives underlying the conservatism of the Councilors what they may, the reasons advanced by some members of the body, in explanation of their dilatoriness, appear to be convincing that, in this case, the Brooklyn Board of Aldermen is about right.

The petition of the residents so anxious for the chance to use electricity as an illuminator is as follows: "The undersigned residents of Brooklyn respectfully petition the Common Council of the city of Brooklyn to take early and prompt action in the matter of introducing into the city some system of electric lighting. Brooklyn is far behind even the smaller cities of the country in availing itself of this great invention, so necessary and so useful for our stores and manufactories, and which will prove of such great service in lighting our avenues and streets. While isolated plants may be used, they are too expensive for any but the largest establishments, and it seems to us that it is now possible, and highly important, that, while preserving and protecting the interests of the city, the Common Council should, without undue delay, grant to some one or more of the many applicants before it, permission to give to our citizens the privilege of enjoying the great utility of the electric light." Then follow the names of the signers, which need not be here reproduced.

When the petition had been read, Ald. Kane, head of the Committee on Lamps and Gas, said that his committee, it seemed to him, was absolved, through operation of the Board's rules requiring action to be taken on this and kindred matters within certain specified limits of time, from further consideration of these petitions. This was not urged by the Alderman as a necessarily fatal objection, he being more disposed to continue the policy of passiveness on account of the discussion now going on at Albany in the State Legislature, regarding the law bearing on the point of making compulsory the placing underground of all electric conductors. Ald. Kane's last objection is reasonable and proper. That the Albany legislators should pass this measure admits neither of argument nor doubt, as the forest of poles and network of wires everywhere visible in all our larger cities and towns has become so rank in growth as to have reached the proportions of an intolerable nuisance. The underground measure is not a harsh one, and both European and American experience removes the objection, still even urged in some quarters, that the burying of electrical conductors is yet in the experimental state, and that to so ordain would hamper and embarrass future applications of the electric current to industrial uses, owing to the largely increased expenditure incurred at the outset in installing the plant. Should the underground measure become a law, then Brooklyn's authorities will be in proper position, after authorizing the electric promoters to go ahead under the new condition of things, to determine how much economy is involved in electric street lighting. We think that the City of Churches is not disposed to enter into any electric lighting contract, even at the figures now paid by this municipality—viz., 70 cents per night per light, or $255.50 each per year—under the overhead wire system; and if our opinion be correctly conceived, how can electric lighting promoters expect to do the work for a less figure when obliged to bury their conductors? It may be urged that the tower system will then be brought into more prominence. Well, let us take a look at what New York pays for the tower lights in Union Square. The six tower lights cost $8.40 per night, or $3,066 per annum. This sum will pay for the lighting of 175 gas lamps, all night and every night in the year; and can anyone dispute the proposition that the 175 gas lamps would do twice the amount of actual illuminative work now accomplished by the tower system? The Union Square tower lights may make a very beautiful spectacle when viewed from the roadways of Brooklyn's great bridge; but would Brooklyn be willing to furnish a similar auroral display to those dwellers in New York who might happen to witness it from, say for instance, the reservoir in Central Park? And if Brooklyn would be willing to furnish the spectacle, would her taxpayers be willing to pay $3,066 per annum for the privilege? We rather think not. All things taken into consideration, Brooklyn's Aldermanic policy of *festina lente* is about correct.

During the proceedings transacted at the same session of the Board, another matter of interest cropped out, in the shape of the following resolutions offered by Alderman Bowers, "*Resolved*, That it is the sense of this Common Council that no more franchises should be given to gas companies, allowing them to enter upon the streets of the city, and disturb and tear up the pavements and crosswalks, except upon petition of the property owners, and that this Common Council recommend proper legislation providing to that effect. *Resolved*, That the City Clerk be and is hereby directed to send a copy of the above resolution to each Senator and Assemblyman from Brooklyn."

A motion to table the resolutions was then made and lost; subsequently an attempt was made to have the resolutions referred to the Committee on Legislation. When the latter motion was proposed, debate ensued, and some of the members were rather pointed in their remarks. Alderman Kane said he thought the resolution was in the interest of the Standard Oil Company, asserting that favorable action on it meant the passage of Senator Jacobs's bill, which bill really meant that there should be no further competition between Brooklyn gas companies. He thought every opportunity should be given for such competition, claiming that by this means only could the people be delivered from the tender mercies of the monopoly threatening them. After more testimony of a similar nature the motion to refer was negatived, and the following substitute was offered: "*Resolved*, That the members of the Senate and Assembly from this city be requested to use all honorable means to defeat the bill offered by Senator Jacobs, requiring the consent of a majority of property owners before the permission shall be granted to gas companies to lay gas mains in the streets of this city; and the clerk be directed to send a copy of this resolution to each member of the Assembly from this County (Kings) forthwith." In the debate that followed, it was charged that the Jacobs bill was far from being in the gas consumer's interest, and was really intended to go as far as possible in the direction of securing the "Standard" combination in its Brooklyn position towards gas manufacture and supply. The old story of how, when the gas war was being waged, rates were temporarily reduced, only to be restored to the former figures when consolidation was effected, was gone over. One of the City Fathers openly charged that the real progenitor of the Jacobs measure was the Standard Oil Company, and, should the bill become law, he objected to acting in any manner, however slight, in the capacity of one who "would save that corporation's chestnuts from the fire."

When the whole matter had been sifted through the meshes of discussion the substitute resolutions were put and carried by a vote of 14 to 4.

From a review of the preceding matter, even a layman might be excused for forming the opinion that the great oil monopoly, appearing to have fixed up matters entirely to its own satisfaction, as far as the "raiding" part of the business is concerned in the Brooklyn gas field, seems now very suddenly, and without any very great effort, anxious to pose as a true believer in the idea that competition in gas supply is pernicious in principle and wrong in practice—and particularly obnoxious and injurious in the case of conquered Brooklyn. This change of heart was probably due, in some measure, to the aggressive attitude so long maintained by the Nassau Company. The stoppage of warfare tactics by the Nassau folks is all the more inexplicable when it is stated that they had the entire sympathy of the community with them, and had numerous pledges, from consumers along the lines of their proposed pipe extensions, to take gas from them, even at a higher price, if necessary, than that charged by the oil monopolists, ignoring in every way the claimed superiority of the water gas article, only asking to be furnished with a gas product that would be safe for use in household and home.

To say that the people of Brooklyn are disappointed at the Nassau Company's latest action is putting it rather mildly; and to say that the Nassau Company lost a golden opportunity to make itself master of the situation is writing it down milder still. This JOURNAL has always been a consistent and thorough opponent of the foolishness, nay, the imbecility, of opposition gas schemes of no matter what sort or description—and we have been just as consistent believers in and advocates of the policy of selling gas cheaply, in order that the financial position of the gas maker's industry may be made solid and strong. We do not propose to change our views now; but we do hope that legislation will speedily prevent the possibility of a recurrence of the circumstances, in any other city or town, that have marked the progress of the Brooklyn "gas grab" in all its nauseating details.

Awarding Street Lighting Contracts in New York City.

The Gas Commission have awarded the street lighting contracts for the fiscal year ending April 30, 1885, as follows: New York, Manhattan, Metropolitan, and Mutual Companies, at $17.50 per lamp; Harlem, at $19.50; Central, at $29; Northern, at $32; Yonkers, at $30. The Brush Electric Company gets, as near as at present can be estimated, 342 lamps, and the United States Electric Company about 300, both of which awards will be noted as a decided increase over the numbers formerly maintained by the respective companies.

[Official Report.—Concluded from page 184.]

Fourteenth Annual Meeting of the New England Association of Gas Engineers.

Held at Young's Hotel, Boston, Mass., Feb. 20 and 21, 1884.

Second Day—Morning Session—Feb. 21.

MR. SLATER SUGGESTS THE APPOINTMENT OF AN ADVISORY BOARD.

Mr. Slater—In the past two years, during which I have had the honor of occupying the Presidential chair, one subject has particularly exercised my mind; and this subject was the devising of some means towards increasing the effective working of the Association. You have seen fit to take action on some of the recommendations which I made in my address. I desire now to offer one further suggestion.

During the past few years quite a number of new members have been added to our membership lists, some of whom are young in the business, and, no doubt, the youngsters oftentimes want advice. They occasionally meet with trouble and encounter difficulties in their daily routine work, and feel the need of applying to those of larger experience, in order that they may be extricated from the perplexities so often cropping up. In view of this, I think it would be a good idea to appoint what might be called a Board of Referees, consisting of, say, one member in each State—or, as Massachusetts is large in territory, and possesses a great many gas companies, there might be more than one member on the Board from that State; then any member of the Association, wishing to get advice on special points, during the time intervening between the meetings of the Association, could call on the Referee in his district or State for such information as was desired; or, if the question at issue were more than peculiarly knotty, the applicant might be given the privilege of appealing to other members of the Board if deemed necessary. Instruct each member of the Board of Referees to keep an accurate account of what he has done, of the advice that he has given, of the difficulties that the questioners had sought to overcome, making a full report of these particulars at the next meeting of the Association. These reports could then come up for discussion before us all, leaving little room for doubt that such discussion would be of great interest to every one of us. It is my opinion that much benefit would follow from such a plan of action.

Mr. Cabot—I will second the suggestion advanced by Mr. Slater. While believing that each member of the Association is ever ready and pleased to aid his brother associates in any way he can, I think, if such Board were appointed, with some one of its members accessible, our younger members would apply to such referee for information more quickly and frankly than they would be apt to do under other circumstances. If such a Board be established an individual member would feel that he had a right to ask for information, and could make application without any seeming intrusion. Believing that Mr. Slater's plan will work to mutual advantage of the members, I extend it my support.

Mr. Slater—If affirmative action should be taken in this matter, I think it would only be proper that the expenses of the Referees should be paid, if expenditure became necessary in solving the queries propounded. These expense accounts could be presented, when the Board of Referees made their annual reports, and paid out of the Association's funds.

Mr. Harbison—I heartily concur in the suggestions advanced by Messrs. Slater and Cabot. I think we might go a step farther, and devote one or two hours at each of our meetings to what could be designated an "inquiry session." We might have a question box, allowing members desirous of obtaining information about any matters connected with their business, but who would not like to rise in their places on the floor and make the queries publicly, drop such question, plainly written out, into the box, and assign a fixed period, during our sessions, when the submitted questions may be answered.

The President—I have here a list of questions before me just handed in. These I propose to put to the Association, after we get through with our ordinary routine business, in the precise manner proposed by Mr. Harbison.

Mr. Harbison—I am glad to know that. I wish there might be a box placed on the table, nave the members of the Association drop written questions therein, let the President open the box at a certain time, let the queries be read, allowing the members to discuss them as thought best. This seems to me a very good course to pursue.

The President—I understand Mr. Slater to move the appointment of a Committee, composed of delegates selected from the different States of New England, for the purpose of carrying out his suggestion.

Mr. Slater—I move that the President be authorized to appoint such a committee.

The President—What number would you suggest?

Mr. Slater—I would suggest one delegate from each State, excepting Massachusetts; from that State, owing to reasons given by me when first speaking to the question, there might be more than one representative chosen.

Mr. Cabot—I second the motion.

The President—Are there any further remarks to be made on the subject. I think that Mr. Cabot has expressed the feeling entertained by us all when saying the advice or help of any member is always gladly extended to any of the gentlemen who have recently joined the Association. If such a committee as is proposed would prove beneficial it certainly ought to be appointed.

At this point the motion was pressed to a vote; the President declaring the measure carried, although several voices were heard in the negative. The matter was subsequently reopened.

Mr. Stiness—Mr. President, that was a very light vote; perhaps the members generally do not understand the motion. It seems to me that any of the younger members of the Association desiring advice can readily obtain such by applying to his brother members. Should he not wish to make a direct personal application let him address an inquiry to what may be termed the official organ of the gas engineers of the United States—the American Gas Light Journal. Such inquiry, I doubt not, would elicit replies from all sections of the country, because I think the gas fraternity throughout the country would gladly enlighten any fellow gas man seeking information. Perhaps we might all want to be on that committee. I hope that this matter will receive the earnest attention of the members, and that it will be voted upon by all. I, for one, am opposed to the measure, because I do not think it is needed.

Mr. Cabot—I did not second the motion in the belief that members of the Association were unwilling to give any information in their power. I did so supposing that we might have some modest men among us not possessing the great meed of confidence belonging to others of our body; therefore, it might be more pleasant to the modest man should he know of somebody to whom he felt he had the right of applying for advice, just the same as he would go to a lawyer, or other professional man.

Mr. Slater—Perhaps the gentlemen do not understand the full import of my motion is recommending the appointment of this Board of Referees. One object was to bring these matters before the Association at each meeting. I think it would be a means of bringing up interesting subjects for discussion, and that the information thus brought out would be of great general value.

Mr. Cabot—I am not sure but what the proposition of my friend Harbison will cover the entire ground—that is, to have a question box.

Mr. Allyn—I voted for the motion, but, I must confess there is one feature in it to which I object; and the objectionable part is the suggestion that the expenses of this Advisory Board should be paid out of the treasury of the Association. I believe if information is worth having it is also worth paying for. If I get in a tight place, and ask Mr. Slater to come and help me through the scrape, I am perfectly willing to pay his expenses, and probably something in addition for his services. I do not see why this Association should furnish an Advisory Board for the benefit and advantage of the several gas companies scattered over New England.

Mr. Stedman—I think it would be an admirable idea to have this Advisory Board, but for the notion that it would tend to continue the habit of modesty in the younger members, and so prevent them from asking advice openly. One of the earliest cautions received by me when starting in the gas business was, "Do not hesitate to show a plentiful lack of knowledge when you go among your older brothers. If you do not know what a thing is, or what it is for, or what its utility is, do not be afraid to ask for information." It seems to me that the occasions on which the younger members of the Association would be most likely to call for advice would be in emergencies. In such situations the applicant would prefer to call upon the nearest party whom he thought capable of rendering assistance, rather than by sending to a remote part of the State to get advice from a regularly constituted adviser. I hope that none of the younger members would for a moment hesitate in asking help or advice from any member of greater experience, when such assistance would be of practicable assistance and benefit. It seems to me as though it would be a source of gratification to any gentleman who was thus called upon, and the adviser would rather feel it a favor conferred upon him to be privileged in extricating his junior brother engineer from doubt and difficulty. For these reasons I think the appointment of this proposed Board would savor strongly of supererogation.

Mr. Sherman—I would like to know of any member, be he young or old, who has ever applied to the engineer of a gas works, either in New England or out of New England, and been refused the information sought after, or who has reason to complain of uncourteous treatment arising from such request. I would like to have him rise up and be counted. "Many a time and oft" have I asked for advice, and always got it—and I have visited as many gas works, probably, as any other member of the Association. I cannot recall the first instance wherein I have ever been refused any information that I asked for, or been rebuffed in any style whatever. I fail to see any occasion for the appointment of the Board called for in the resolution.

A rising vote was then taken upon the motion. It appeared that nine members voted in the affirmative, thirteen being recorded in the negative; the Chairman accordingly declared the resolution lost.

SOME QUESTIONS ASKED AND ANSWERED.

The President here announced that a list of questions had been handed him by a member; and the proposer of them would be glad to obtain answers to his queries. The first question being—

"Will it pay to build Dieterich furnaces in works where the annual product is less than eight million cubic feet?"

The Chairman, continuing, said he did not know of any other gentleman present more capable of giving an answer to the query than Mr. Nettleton. He therefore appealed to him for an opinion.

Mr. Nettleton—I should say, off-hand, that it would pay; but before giving a definite answer it would be necessary to make some figures as to output in summer. I am quite confident that our works were about that size when I put in the Dieterich furnace—and if I had succeeded as well then as I have since I should have been perfectly well satisfied with the change.

Mr. Harbison—Are we to infer that Mr. Nettleton is not now satisfied with the change because he had an unpleasant experience to begin with?

The President—No; you are not at liberty to infer that. He read a paper yesterday upon the subject, in which he stated he has done very much better of late years than he did at first. I think Mr. Stiness can answer this question.

Mr. Stiness—Our works are of a larger capacity than that designated by the member asking the question; but I am very decidedly of the opinion that a furnace constructed upon the Dieterich principle, or upon the principle outlined by Mr. Stedman in his remarks during yesterday's session, can be judiciously and economically applied to a bench of three retorts, with the resultant production of a larger amount of gas than is the case when employing ordinary firing methods, and that this increased production will be obtained with a decreased fuel and labor charge. Possibly, if you take a large furnace similar to that we are now using at Pawtucket, and by which arrangement we can produce 60,000 feet of gas per bench, the output per day would be larger than the questioner desires. As I said before, I am positive in the opinion that this style of construction can be followed so as to apply to furnaces of any size.

The President—Or to any other furnace?

Mr. Stiness—Yes; or to any other furnace.

The President—The next question is, "Which is the better enricher—cannel or petroleum? Will the use of the latter prevent the deposition of naphthaline?" There are several gentlemen present who use naphtha as an enricher, and I will call upon them to give us the benefit of their experience.

Mr. Stiness—I now use a "gas-oil," furnished by Messrs. Spear, of Boston, and I hardly know what naphthaline is in my services, street mains, holder, or anywhere else. I have been told by some parties that enriching with cannel prevents naphthaline accumulations; and the reason why I use the oil spoken of is because I can obtain it more readily than I can get cannel coal. In my case I am not troubled with naphthaline; and am not bothered with stopped services. In small works, those not able to purchase five or six hundred tons of cannel at a time, a barrel or two of oil can be readily procured—in such situations it would seem much better to use the oil.

Mr. Spaulding—I am glad this question has been asked, as there is quite a difference of opinion regarding the relative merits of cannel and oil as enrichers. I have used both, and have given preference to the oil on account of its being more easily obtained. The results from either seem to me as quite nearly similar. I would as soon have one as the other. I hope the topic will be thoroughly discussed, as I would like to hear the opinions of various members on the subject.

Mr. Harbison—Do you mean to say that the result is the same in the cost of production, or in the uniform quality of the gas?

Mr. Spaulding—In either case. I cannot perceive any difference in my works. I bring my candle power up much more quickly when using oil, which may be reckoned as one of the advantages attending its use. As to relative expense of the two, I think oil is the cheaper.

Mr. Coggshall—I have used oil as an enricher for quite a number of years. When commencing its employment I tested it in comparison with cannel coal, in order to determine the cost of one over the other, and decided that oil was the cheaper. The exact figures then obtained I fail to remember now, but the item of cheapness was considerable. Besides cheapness there were other advantages derivable from the use of oil, one of these being that you can readily introduce it into the retorts at any time. Whenever my gas gets poorer than I want it, I can at once bring it up to the standard by oil enriching. I am now supplying gas of from 17½ to 18 candles, and for the last three months have not used over 150 gallons of oil; in that three months my product has been about 3,000,000 feet. From my own experience I should give oil the preference.

Mr. Cabot—What kind of coal are you using?

Mr. Coggshall—Youghiogheny.

Mr. Spaulding—I can hardly agree with Mr. Coggshall about introducing the oil into the retorts at any period of the distillation. I find it disadvantageous to introduce oil into retorts when at high temperatures. I think the proper course would be to add the oil about an hour after the retorts are charged; if the oil be put in when the heats are high, it is at once converted into lampblack, and the enriching effect is lost.

Mr. Coggshall—I add the oil at all hours—from a quarter of an hour up to the end of the charge. I will admit that when a charge is nearly carbonized you do not get the full benefit from then adding the oil; there is no question about the tendency to make lampblack under this method of working; but when running four-hour charges there is an abundance of time to choose from in selecting the proper moment to introduce the oil. I am convinced the best results are obtained when the oil is used in empty retorts. I have tried this plan so many times, and have been so careful in my experiments, when thus working, that there is no question in my own mind as to its advantages.

The President—Do you use naphtha or petroleum?

Mr. Coggshall—I use an oil that I get from Crocker & Co.

Mr. Allyn—I have been using "gas-oil" for a number of years, and get very satisfactory results. I use from two to three gallons per ton of coal carbonized, and have perceived a great decrease in naphthaline troubles about my works since introducing the system of oil enriching. Before we began the use of oil for that purpose we considered ourselves fortunate if we went along for three months before being obliged to clean out the inlet or outlet connections to the holders; now we only have had occasion to clean the pipes but once during the last two and a half years, and attribute this result to the use of oil.

The President—Did you use cannel before?

Mr. Allyn—Yes sir; we used cannel before, and employed an average of 4 or 5 per cent.

Mr. Stedman—Mr. Slater has probably used more oil than all the rest of us put together. We would like to have him give us the benefit of his experience.

Mr. Slater—That is the very reason why we never want to see any more of it. At what were formerly the opposition works in Providence—a plant built for ordinary coal gas methods, except that provision was made for enriching with naphtha—in order to supply the quantity of gas required we were obliged to carry a stock of naphtha varying from 50,000 to 100,000 gallons. About three months after we had taken possession of the plant—it was in the early spring—I went over to the works one morning and found the superintendent as pale as a ghost. He brought me out into the yard and pointed out the following condition of affairs. I found on the dock near the storage tank, a surface of three or four times the area of this room covered with about half an inch of naphtha. It could not get away from the works, and so it ran in under the wharf. If a lighted match had been thrown in there the whole establishment would probably have been destroyed. The river was covered with ice, and we were obliged to keep a watchman on duty there both night and day until the warm weather melted the ice and carried the dangerous stuff away. The cause of the trouble was about like this: The naphtha tank was set up some four or five feet above the surface of the ground, and the pipe leading from bottom of tank went into the ground to a depth of some three feet, and then turned, with an elbow, to run into the retort house. In our examination we found the elbow, at the bottom of this pipe where it started to go to the retort house, had become fractured, and the naphtha had, of course, run off. We kept up enriching with naphtha, finally abandoning it when we had satisfied ourselves that, in making the quantity of gas we did, we could use cannel coal to greater advantage, and with much less risk.

Mr. Stiness—Was not that naphtha tank, as well as the rest of the plant built by the opposition people with the ultimate end of selling out to the Providence Company? I do not think Mr. Slater would have built a tank in that way, and, therefore, there would have been no naphtha stream to flow into the river.

Mr. Slater—The tank was a very good one, and the pipe was broken simply because of the expansion and contraction occasioned by changes of temperature.

Mr. Spaulding—In my experience I feel safer when using cannel as an enricher; still, once in a while, I find oil very convenient. In small works I consider the use of oil as almost indispensable; but I certainly prefer cannel; cannel would always be my choice.

Mr. Stedman—At the Newport works we have tried both, and, as has been remarked, we sometimes find oil exceedingly convenient, more especially when anything to cause a sudden running down of our candle power occurs, as it is very easy to bring the gas up to standard with

We are at present using cannel, and no oil. A comparison of the cost of the two indicates, in our case, that, when paying 7 cents a gallon for oil and $9 a ton for cannel, there is not much difference in the financial result. In our case we have to purchase oil by the barrel, or several barrels, having no storage tanks, and the loss by leakage would therefore seem to be inevitable; that fact should be taken into account when estimating the expense. Mr. Rollins has used a great deal of oil in Worcester, and gets it in a manner precluding any loss from leakage. We should like to hear his experience.

Mr. Rollins—I get my oil in tank-cars, and have my storage tank buried in the ground out of the reach of frost, and so there is no expansion or contraction as was the case with Mr. Slater. In unloading the tank-car directly into the storage tank there is no appreciable loss of oil. My experience has been such that I use very little cannel, when I have oil on hand. As my storage room is limited (I have only one tank), and sometimes there is delay at the shipping point, I occasionally have to resort to cannel. With that exception I use oil for enriching, and have found it considerably cheaper. I have not in mind just now the exact relative expense.

Mr. Harbison—Will Mr. Rollins please tell us what his oil and cannel coal cost him?

Mr. Rollins—During the last two years oil has cost from 5 to 6¼ cents per gallon—the last price, I believe, was 5 cents per gallon, delivered.

Mr. Cabot—That is the crude?

Mr. Rollins—Yes.

Mr. Spaulding—In what quantities do you obtain the oil?

Mr. Rollins—In tank-cars holding 4,000 gallons. Our cannel coal costs $10.50 per ton.

Mr. Coggshall—A few years ago I made a comparison of relative cost. I then paid 5 cents per gallon for oil, and $10 per ton for cannel coal. The experiments in my case showed oil, at those figures, to be the cheaper. Our oil is delivered in tank cars; the storage tank is buried in the ground; we empty the tank car, by gravitation, in about an hour and a half.

Mr. Spaulding—I would like to ask Mr. Rollins as to the comparison between crude oil and naphtha. Which gives the better results?

Mr. Rollins—For the same expenditure in dollars and cents I prefer the crude oil. I get better results for the same amount of money. Especially was this the case for the last year or two, when I could not get naphtha at any price at which its use would be profitable as against cannel coal.

Mr. Learned—I have been using both cannel coal and oil. With cannel at $10 per ton, and oil at 6¼ or 6½ cents a gallon, I find no difference in cost. There is one question, in connection with this subject, which I would like to ask. It is relative to the effect of the oil upon the tar and ammoniacal liquor. My impression is that the use of oil as an enricher decreases the quality of the ammoniacal liquor and the tar. Another thing—what is the sense of our buying oil from the Standard Oil Company? (Laughter and applause.) I have been up to our State House quite a number of times, attending the hearings upon this water gas business, and I have become somewhat disgusted. It seems to me, if we continue using such quantities of oil for enriching, that before a great while the water gas people will come along and ask us, "What are you buying so much oil for? You need not talk about our using oil when you are using it yourselves."

The President—Perhaps Mr. Slater can tell what effect has been produced upon the ammoniacal liquor and tar by the use of oil?

Mr. Slater—Our experience went to prove, during our use of oil as an enricher, that the ammoniacal liquor was of little or no value.

The President—Mr. Rollins has had quite an extended experience in this direction. What does he say?

Mr. Rollins—I have not particularly observed the effect of such use upon our ammoniacal liquor, as we have been disposing of our water at a fixed price per ton of coal carbonized, and I really have not kept any track of the amount made.

The President—Perhaps Mr. Page can give us some information upon that point.

Mr. Page—Last year I had a contract with one of the largest distillers in New York city for all of his benzole product, to be shipped to my correspondent in London. One stipulation of the contract exacted by the London parties was that there should be no petroleum in the benzole. The deliveries in the early part of the year were all correct. The analysis was made for the London people by a New York chemist, and no trace of petroleum was found in the benzole. After the first of July I sent a sample of the first shipment to the chemist for analysis, and he reported back that there was a trace of petroleum, although it was an exceedingly small one. I at once wrote to my correspondents, asking if the benzole could not be received, as there was a large quantity of it, and as the producers in New York were under contract to deliver it all to me. But the London parties were so afraid that I might ship it before receiving their answer that they cabled back to me, "Do not receive any." The importance of this will appear when I state to you that the New York tar distilling firm would have been paid by me, at the rate of $2.25 per gallon for 90 per cent. benzole, at least $10,000 for benzole from that one gas company. The benzole is used, as you know, almost exclusively for the manufacture of aniline dyes, and the infusion of even a small percentage of petroleum renders it almost valueless for the purpose. Then, again, as to the deteriorating effect of oil upon the ammoniacal liquor. This same company contracted, at a high price, for ammoniacal liquor to be worked up into sulphate of ammonia. The infusion of a comparatively trifling percentage of naphtha was considered so disadvantageous as to cause them to make a claim for a reduction.

Mr. Sherman—Is Mr. Balmore, of the Harlem works, New York city, here? He has had considerable experience in enriching with oil, and we would like to hear from him.

Mr. Balmore—They would not take our tar so long as we continued to make naphtha gas. Our hydraulic mains were filled with a gluey substance that we could not get out.

Mr. Sherman—There is a point in this discussion (I consider it a vital one) which has not yet been brought out. We cannot afford to use any material for an enricher that is liable to injure our apparatus. Those who have used naphtha to any extent—I do not here refer to parties who confine its use to a quantity which is hardly sufficient to grease the coke wagons, referring more particularly to those who use it as it is employed in making water gas—find that the diaphragms of their meters are seriously injured from contact with this gas. I am not prepared to say that the small quantity of oil used by some of the members of this Association for enriching purposes would prove injurious to the meter diaphragms; but the tendency certainly is to ruin the meters. This assertion would be fully borne out by the meter manufacturers were they willing to testify to the facts. I think Mr. Balmore has had some experience in that direction.

Mr. Balmore—Such was our experience; and that was not all. We could often take a half gallon of naphtha out of our meters.

Mr. Slater—At the works to which I referred a few moments ago we used naphtha for enriching for about two years and nine months after taking possession of the plant. We found the meters in such bad condition that we had to take them all out, and clean them thoroughly before they would work properly.

Mr. Stedman—In regard to the condensation of moisture I must relate an experience that we had at Newport when we were using the "gas oil." It happens that the gas works are at one end of the town, and the President of the company lives at the other end, the gas works being at the South end. He lives in one of the old-time houses, built a great many years ago by some one of the nabobs who used to import "darkies," and make New England rum in Newport. When the mains were extended to his house, he had it fitted for gas, and there was quite a space between the roof of the piazza and the ceiling, which was utilized for the purpose of carrying the gas pipes around the house rather than cut up the ceilings and floors; the pipes were projected thence through the sides of the house. There was some trouble from condensation during the cold weather; but the pipes were adjusted from time to time so that the water would run off. It was preferred to have the condensed water run towards the chandeliers, whence it could be drawn off by the keys once in a while. One evening, however, during the time that we were using the "gas oil," this accident occurred: The family had been absent for a long time, and during the cold weather no one had used the parlor chandelier at all. This evening some one went into the parlor to light up, in anticipation of the arrival of the absent members of the family. The first thing, of course, was to turn on the key, next to apply a match, and the next thing done was to endeavor to extinguish the table cloth directly underneath. The condensation ran down in a stream, so that it consumed the cloth, and they were in imminent danger of a fire. Before they could extinguish the fire the room was so filled with soot that every article in the apartment had quite a perceptible deposit on it. Then, without turning on any of the other keys, the use of that chandelier was abandoned, and the next day the keys were taken out carefully and about a fluid ounce was drawn from different parts of the chandelier and brought to me, when I was then informed of the disaster. I replied that the only thing I could say was it was fortunate it had happened where it did rather than in some other house; for I thought that the accident might have been very disastrous if it had occurred where it could not have been promptly dealt with.

The President—I think now that the members can see the advantage of pursuing the course of inviting discussion in answer to questions. There are several other queries in my possession, but I fear we will not have time to consider them all. There is one, however, that can be solved quite readily, I have no doubt, by some gentleman present. The query is, "Will it pay to burn tar when the selling price is $2.25 per barrel of 40 gallons, with coke at 9 cents per bushel?" I think Mr. Sherman can answer this.

Mr. Sherman—He had better sell his tar.

The President—Another question is, "Does it pay to use bye-pass dip-pipes?" I call on Mr. Coggshall for his experience on the subject.

Mr. Coggshall—I have used them for 10 or 15 years with entire satisfaction.

The President—What would you say was the increased result obtained by their use?

Mr. Coggshall—It would be difficult to state, as we operate higher heats now than under the old regime. For the past three months our yield has been 5.20 to the pound; we used to get but 4.50.

Mr. Sherman—I have been using them for the past ten years; but I am of the opinion that the question cannot be answered off-hand; it would take some nice calculation to state the gain. I still continue to use them, and propose to do so. That is the only description of answer I would be willing to make to the question without being granted the privilege of discussing the many details necessarily to be considered in arriving at a proper solution.

Mr. Harbison—Are you using them exclusively?

Mr. Sherman—Yes.

The President—Do you use them, Mr. Harbison?

Mr. Harbison—No, sir.

The President—Why not?

Mr. Harbison—Because, from what I have been enabled to learn from the experience of those who do use them, I do not think it is desirable to make the experiment.

The President—I think Mr. Rollins, of Worcester, has used bye-pass dip-pipes for quite a while.

Mr. Rollins—When I took charge of the Worcester works I found bye-pass dip-pipes in use on all the benches, and have continued their employment since. I use them really only as an adjustable seal, varying the seal from an eighth to a quarter of an inch at different times, working with one sized seal for a period of 50 days.

The President—Did you find any appreciable difference in your yield?

Mr. Rollins—With an inch seal I think there was but little variation. As several years have elapsed since making the experiments (and was led into making the tests on account of the efforts of some parties who complained that we were infringing patent rights owned by them), I may be pardoned for not remembering now the exact figures then obtained. We are using them to-day, and would not be without them.

The President—I think Mr. Allyn has used bye-pass dip-pipes. What has been his experience?

Mr. Allyn—Like Mr. Rollins, I found them in the works when I took possession. At the outset I feared I should meet with considerable difficulty in keeping them in working order, but was agreeably disappointed in that particular, as I have had to repair only one valve in a period of seven years. But there is one objection to their use, which may be thus stated: The exhauster, working directly on the charge in the retorts, if you are running at a vacuum, and if there are imperfections (as is usually the case) in some of the retorts, you draw in air, with consequent deterioration in your candle power. Then there is the other extreme. If you are running under pressure, and the retorts are cracked and leaky, you lose your gas, and the yield peters out. We are thus required to observe closely the working of the exhauster, and to keep a constant watch on the quality of the gas. We have a jet photometer continually burning on the inlet of station meter, and have a minimum candle power limit. If we find our product getting below that candle limit we immediately increase the quantity of enricher, and let up a little on the vacuum at which we are running the exhauster.

Mr. Harbison—I think Mr. Stiness has had some experience in this direction.

Mr. Stiness—My experience, or rather my manner of working, differs somewhat from that of our friend Allyn, of Cambridge, as I never allow a vacuum on the hydraulic main, and do not suffer any of the troubles recounted by him. For some years I have used what is called the Thompson dip valve, and consider it an excellent arrangement. We find that we can adjust the seal at any point we please. As Mr. Sherman has stated, there are many points which cannot be thoroughly explained here unless more time is consumed in the discussion than we could possibly at present allow. If no vacuum be placed upon the hydraulic main, you will then only exhaust the gases distilled from the coal. In the works which we erected the past year (as I stated in my paper) I have placed valves upon the dip-pipes. By using these dip-pipe valves I have been working some retorts for six months without a particle of carbon having been taken from them, and I do not think there will be for a year to come. If the member who proposed this question will take the trouble to visit the works at Pawtucket, I will most cheerfully devote any time that he may desire to an examination of the practical workings; and I think he will be fully satisfied that he can have a system where the seal can be adjusted, either to 2½ inches, or to ½ or to ¼ of an inch. I think it is almost unsafe to run at so slight a seal. These valves are worked by a lever, and can be adjusted at any moment.

Mr. Spaulding—I have heard, during the past two or three years, a good deal said about this question. Last year my company erected new benches. Wishing to convince myself whether there was value in the valves, I said to Mr. Rollins, of Worcester, that if he would send me a design I would put them on my benches, and give them a fair trial, and would pay for them if they were satisfactory. I do not run my benches with the open valve entirely. When using oil in these benches I find the system very convenient. When using oil I pull the valve open, and that is where the valve is worth ten times what it costs. As Mr. Stiness remarked, I can adjust those valves so that I can have an eighth of an inch seal, or a quarter inch seal; in short, any required dip that I want. I certainly feel that the system is a good one, if handled properly, and shall recommend its use to my directors.

The President—I would like to say that, personally, I have made numerous experiments in this direction, and I question very much whether any increased yield could be seen between a retort under a very light pressure, and one run under practically no pressure at all. A very small pressure carried on the retort will, I think, affect the yield equally, no matter whether occasioned by dip-pipe or back pressure. So far as the amount of deposit of carbon goes, I do not think there is any question but that the gas will pass off, leaving a less deposit of carbon behind. If the gentleman who asks the question is running his retorts at a vacuum, I think he is taking a good deal of risk. I think Mr. Sherman could give us an account of an accident that happened in his locality before he took charge of the works, and when the retorts were run at a vacuum. As I remember the circumstance, a sufficient quantity of air was sucked into the retorts to cause the melting off of the dip pipe on the inside of the main—the main turning red-hot at the time. This is the sort of accident one would not like to have happen in his plant.

Mr. Stiness—I should hardly call that intelligent management. With proper management (and I do not consider any too skillful management was displayed in the case cited by the President) the result would have been different; and I am hardly disposed to admit that the President's example was a fair criticism, or a fair comparison to make between a dip-pipe and a sealed main.

The President—I do not wish to be understood as making such a comparison. I understood Mr. Allyn to say he ran his retorts with a slight vacuum upon them; consequently a little air was sometimes drawn in. When he found that to be the case he injected an additional amount of oil to make up the loss in candle power. I know that accident has resulted from pursuing a similar course elsewhere.

Mr. Spaulding—I think that is where much of the trouble may be traced to—running under a vacuum. I would almost as soon roll a keg of powder into my retort house, and set a match to it, as to run retorts below a vacuum of, or even at a quarter of an inch.

The President—There are three questions left upon this list. I will read them, and answers to them will more than likely be elicited. This is the first one: "Ought a gauge upon outlet of station meter show more pressure during maximum production than that on the holder, providing the gas turns five corners to get into the holder?" I will ask Mr. Armington for his judgment upon that point.

Mr. Armington—My judgment would be that it would show a good deal of extra pressure if it had to turn five corners, particularly if the corners were at sharp angles. It would be impossible to decide the amount of pressure until I knew the diameter of the pipe and the number of feet that the gas was traveling. I would advise the gentleman to get rid of those five sharp turns as quickly as possible.

The President—The next query is, "What is the best kind of cement for patching retorts?" Will Mr. Cushing, of Lowell, answer that?

Mr. Cushing—I think there are gentlemen here present who can tell more about this question than I can. I have used a very good cement which is sold here in Boston. Among the various kinds tried by me may be named Seller's cement; and this quality is good enough. I think it is an asbestos cement.

Mr. Harbison—We use "coaline."

The President—We use the same. The next interrogation is, "Will three tiers of lime in purifiers give less back pressure than five, providing the same amount of lime is used in each case?" Will Mr. Nettleton give us his opinion upon that point?

Mr. Nettleton—I cannot say positively. I think the back pressure was the same under both circumstances at the works in my charge. We changed from five to three some years ago, and have now gone back again. I did not notice any difference in the back pressure.

Mr. Spaulding—I have made thorough experiments in this direction, having been in doubt as to what plan—six, five, four, three, or two tiers, using the same amount of lime—was best. Using the same amount of lime, with a given quantity of gas passing through it, I found three layers gave me less pressure. Convinced by my tests, I have adopted this method as the one producing the most satisfactory results.

The President—The next question is, "Which kind of lime is the more profitable, shell or stone?"

Mr. Harbison—I apprehend that depends a good deal upon what either kind costs.

Mr. Crafts—I think Mr. Hallett, of Springfield, can give us some light on that.

Mr. Hallett—We have tried both descriptions. Bushel for bushel, there is no apparent difference in the amount of purification accomplished. We obtain the rock lime some 40 per cent. cheaper than the shell lime, which naturally explains our preference.

The President—You found no difference between the two?

Mr. Hallett—No perceptible difference in the purification capacity.

The President—I believe, gentlemen, that is all the business before the meeting.

ORDERING A QUESTION BOX.

Mr. Harbison—I move that the Secretary be directed to provide a question box for the next annual meeting of the Association, such box to be placed in proper position on the opening day of the session. [Resolution adopted.]

ROUTINE MATTERS.

On motion of Secretary Neal, the subject of holding the semi-annual meeting was referred to the Board of Directors, with full power to make all necessary arrangements.

On motion of the Secretary the printing of the minutes of the Association was referred to the Directors, with power; after which the annual meeting of 1883 was declared adjourned.

[A Paper read before the Society of Gas Lighting.]

Stoppages in Drain Pipes Connecting Gas Works Apparatus.

By James H. Armington.

Some years since a paper was read before this Society, and samples of liquids were shown and mixed in our presence, by one of our members who had encountered a difficulty, and who had, with his usual skill, provided a way by which the difficulty was overcome. The means employed to discover the *cause* of the trouble, together with the remedy applied, made an impression on my mind at the time that has, at this late date, brought out this paper. I refer to the able contribution of Eugene Vanderpool, Esq., Engineer of the Newark (N. J.) Gas Light Company, and read at our meeting in February, 1877.

Certain obstructions had occurred in the drainage pipes leading from the scrubbers and condensers, to which were also pipes connected to the purifiers, in the works above mentioned. An examination of these pipes revealed the presence of a foreign substance which caused the obstruction. A careful chemical examination (made by Mr. Vanderpool) of the substance showed its composition and pointed at once to the cause, furnishing, at the same time a remedy, the application of which, so far as I know, completely cured what the author of the paper, at the time of its presentation, designated as "a fact of extreme importance in reference to designing and erecting purifying apparatus, and the arrangement of drains about the works."

During the early experience of the writer, in the management of a works where purification by the wet lime process only was in use, obstructions would occur in a 6-inch drainage pipe through which the lighter liquid portion of the spent lime was carried to the river. These obstructions would not, or did not, occur regularly; neither did they always occur at times when the pipe was doing the largest amount of work. They would sometimes happen within very short intervals—say, six or seven days; and then, again, there would elapse a period of two or three months when the pipe would remain clear, giving no trouble.

There were also in these works four sets of air condensers and two scrubbers, the drainage from which ordinarily—when no water was being used in either scrubbers or condensers—was conducted away by another channel; but at times the waste from these scrubbers and condensers entered directly into the pipe used for draining the purifiers.

This drainage pipe was 6 inches in diameter and about 600 feet in length. Each 60 feet of it ended in a brick catch-basin 9 feet long. These catch-basins were rendered necessary by reason of the presence of this same substance found in the drainage pipe at the Newark gas works, which had to be removed by steel reamers made in the form of augers, worked by jointed rods, and introduced into the pipe from these basins—two men being stationed at each basin to work the reamers by means of tongs attached to the rods.

I have said that these stoppages occurred at intervals, and this circumstance caused me some thought at the time, because, if the pipe was stopped simply by the sediment contained in the liquid flowing through it, the stoppages should have been most frequent when the largest amount of liquid was being discharged. This, however, was not the case, for the obstructions occurred at times when the drainage pipe was doing the least work. The discharge of this liquid was regulated by the tides—*i. e.*, the pipe outlet was not to be opened except at ebb tide, when the current would sweep the liquor out of the harbor.

I tried to connect the stoppages with the fact that the workman whose duty it was to look closely after the matter of opening and closing the pipe outlet had neglected his business, and that probably the salty waters of the harbor had something to do with the matter; but I soon discovered the incorrectness of this idea, and found that the true cause, whatever it might be, resulted from something as yet undiscovered.

The paper prepared by Mr. Vanderpool upon this subject, I remember, was freely discussed at the time, and some of our number remarked that, although they had never thought of it before, or supposed such results would be produced by bringing these two liquids together, yet each, from some unexplained reason, had always kept them apart, and, therefore, had not encountered the difficulty experienced by Mr. Vanderpool.

I had not lost sight of the fact contained in the paper, and, from time to time, as I thought upon the subject, it occurred to me that the difficulty I had experienced was caused in a similar manner; and that when the drainage from the scrubbers and condensers was diverted from the tanks into which it usually flowed, and entered the 6-inch pipe, then the obstructive substance was formed, and the pipe had to be reamed the oftener to get clear of it.

That a paper prepared and read before this Society seven years since should have caused the preparation of another paper on the same subject, at this late date, goes to show that facts are often set forth that, at the time, may not receive the proper share of attention which the subject demands; yet the facts set forth are not altogether lost sight of, and may, at a future date, not only be the means of solving a vexed question, but may, and in fact *must*, become of great value to the engineer who is planning and erecting works, and who is desirous of avoiding all difficulties with the object of securing the best results.

That we are associated together for the purpose of informing ourselves in regard to the successful conduct of our business, does not, in my opinion, confine us to the preparation of papers relating to entirely new subjects; neither does it forbid us from reviewing the past. Viewed in this light then, and inasmuch as there are those who may not be so familiar with the new and more elaborate modes of management now in vogue, and inasmuch as we are expected to furnish a paper at a certain season, I may therefore be excused for bringing to your notice the statements herein contained.

I desire further to say the fact is patent to all of us that the papers read and discussed before this Society have resulted in showing us that we might, and some possibly have, made changes in their management, as also in their mode of construction, which have resulted in a lightening of their labors, giving them a greater interest in the careful and economical running of their works, and creating an ambition to be counted amongst the most successful of engineers.

Quite lately I have been particularly impressed with these facts on seeing the application of certain ideas arising out of a discussion that took place before a society of which some of us are also members. It was both instructive and pleasant to me to know that the engineer who had made this application had, after thinking over his plans, brought up, before one of these societies, certain details of construction for discussion, which, no doubt, resulted to his satisfaction, for it was plain to be seen that he had adopted them in the construction of his plant, and we may, in due time, learn the results of his experience.

Manufacturing Illuminating Gas from Sawdust, at Deseronto, Ontario.

By Mr. George Walker.

Perhaps a short account of the experiments which I have been making here, in manufacturing illuminating gas from sawdust, may interest your readers. As sawdust has not, I believe, been heretofore used to any great practical extent as a gas producer, a few words regarding its adaptability to such purpose may not be out of place.

The ordinary text-books on gas making and chemistry state that wood is a poor material for the gas-maker's purpose, as compared with coal, on account of the small percentage of contained carbon; but this would seem to be controverted by a presentation of the following facts.

When ordinary bituminous gas coal containing 75 per cent. of carbon is distilled in retorts, about 65 per cent. of the carbon is retained in the carbonizing vessels in the shape of coke, leaving but 10 per cent. available for enriching the resultant gases. Thoroughly dried wood, containing 50 per cent. of carbon, when distilled under similar conditions, leaves 20 per cent. of its carbon in the vessels in the shape of charcoal, allowing 30 per cent. available for the production of gas—or three times the amount obtainable for the purpose in the case of coal.

A comparison of the relative amounts of volatile matters produced from coal and wood shows a still larger difference in favor of the latter. One hundred pounds of coal, producing 65 pounds of coke, leaves 35 pounds volatile matter available for gas making, whereas 100 pounds of dry wood, producing 20 pounds charcoal, leaves 80 pounds volatile matter applicable to a similar use; and, in the case of wood, especially that of a resinous nature,

the total quantity of tarry and oily matters, from whence the illuminating power of the gas is largely derived, is much greater than is the case with coal.

On account of the fine state of division in which the wood exists in the form of sawdust, the processes of screening and drying it, preparatory to its use in carbonization, may all be performed by machinery; and it has also the great advantage, as compared with coal, of being capable of continuous distillation, the sawdust being fed into the retorts, and discharged therefrom, automatically—and this will be noted as involving a great saving in labor.

Even with the crude experimental apparatus I am using at Deseronto, one man and a boy can produce, from two tons of dry sawdust, in 24 hours, using about one cord of soft wood for fuel, 20,000 cubic feet of gas, and with which this town is now lighted.

The apparatus used is a modification of the old "Halliday" process of distilling sawdust for the production of acetic acid, tar, etc. The retorts are of cast iron, cylindrical in shape, and are provided with a cast-iron conveyor, in the form of an archimedean screw, which conveys the sawdust gradually through the retorts, the heat from the furnace carbonizing it during its passage. The sawdust is supplied to the retorts from an iron hopper placed above and in front of the vessels, and furnished with a vertical shaft and screw-conveyor, working in an iron tube connecting the hopper with the retort, by means of which the sawdust is conveyed to the proper receptacles. The mass of sawdust in the hopper and the pipes connecting it with the retorts, as well as the back pressure of the vapor and gas from the interior of the carbonizing vessels, prevents air from entering.

On the arrival of the carbonized sawdust at the rear end of the retort it drops, through a pipe, into an air-tight iron tube or charcoal main, placed at right angles with the retorts and equipped with a screw-conveyer, by means of which it is carried to an opening in the conveyer-tube furnished with a valve connecting it to a sheet-iron air-tight car, into which the charcoal is finally delivered.

The vapors and gases evolved from the carbonizing sawdust ascend through an iron tube, extending upwards from the rear end of the retorts, and then pass on to the usual condenser, scrubber and purifier.

When thoroughly dry sawdust is used, and the apparatus is properly constructed, so that air can be entirely excluded, and, at the same time, proper temperatures maintained, a gas is obtained having an illuminating power of from 12 to 15 candles. In the case of yellow pine sawdust, or that resulting from woods containing like percentages of resin, the candle power of the evolved product is considerably higher.

The carbonized sawdust, or charcoal residue left after distillation, has been found satisfactory for gunpowder making, and is also available for a variety of other useful purposes. There is also evolved a quantity of tar, acetic acid, and methyl-alcohol, which, when obtained in sufficient quantities, may be purified and sold. The tar has the same general composition as coal tar, and a similar range of products may be gotten from it. As sawdust gas contains no sulphur, and but very little ammonia, its purification is simpler than that of coal gas—the only impurities to be removed consisting of tarry matters and carbonic acid. The lime remaining in the purifiers, after the passage of the gas, has none of the offensive smell so characteristic of the fouled lime of the coal gas purifier, although the purified sawdust gas product has a distinct odor by means of which leaks are readily detected.

Minority Report in the Massachusetts Water Gas Case.

The following is the text of the minority report presented by certain members of the Committee on Manufactures of the Massachusetts State Legislature, before whom was argued the question of the advisability of repealing that portion of the State statutes prohibiting the manufacture of a gas containing over 10 per cent. of carbonic oxide.

MINORITY REPORT.

"The undersigned members of the Committee on Manufactures, dissenting from the views of the majority of said committee, ask leave to submit the following:

"I. The bill reported by the majority repeals the provision in Chap. 61 of the Public Statutes limiting the percentage of carbonic oxide in gas sold for illuminating purposes. This provision, which limits the amount of carbonic oxide to 10 per cent., was proposed in 1880 by the Gas Inspector, a public official, as a sanitary measure, and was immediately adopted.

"Carbonic oxide is admitted to be a deadly poison, and it was thought at that time unsafe and dangerous to the lives of the people of this Commonwealth to distribute gas containing more than 10 per cent. of it.

"That opinion is to-day held by Professors Sullivan, Morton, Nichols, Markoe, Babcock (State Assayer), and Hinman (Gas Inspector), and other eminent chemists, as appears from the report of the hearing.

"To repeal this law is to permit the distribution of this poison among the people of the Commonwealth without any compensation to them.

"Its repeal is opposed by the Gas Inspector, by the State Board of Health as represented by Dr. Samuel W. Abbott, who appeared before the committee, as well as by all the chemists before named. Water gas, which the petitioners seek to distribute, contains nearly 30 per cent. of carbonic oxide, and in six (6) years in the city of New York there have been 67 deaths and 7[illegible] cases of serious poisoning from its use, while in the same time and place there were but four cases resulting from coal gas.

"We do not believe such a record will encourage the Legislature of Massachusetts to make the change, more especially when in 56 years there have been but 3 deaths in this State from the inhalation of coal gas.

"That it is unsafe, appears to us beyond all question, and we see no advantages to result that will justify the repeal of this provision.

"It is said that the present law gives a monopoly to the existing coal gas companies. But this is not so; it neither creates nor protects monopolies. Gas for water, oil, or coal gas can be made containing less than 10 per cent. of carbonic oxide, and when so made can be sold in this State.

"It is the cost alone of extracting the carbonic oxide from gas which the petitioners are not willing to incur.

"II. Nor does it appear to us that any good would result from competing companies. The evidence shows that competition has almost invariably resulted in a combination of the companies, in increasing the price of gas, in compelling the consumers to pay dividends on the consolidated capital, and serves no purpose but to subject the people to plunder, the existing companies to wreckage, and assists speculative owners of patent processes (of which there are a number) to sell their patents.

"III. Therefore, when the manufacturers of this deadly gas, containing nearly 30 per cent. of carbonic oxide, ask to have the protective clause of the present law in this regard repealed, and it is found that the deaths by blood poisoning from the escape of water gas, to the number of 67, have already been registered in New York;

"When in the distribution of thousands of millions of feet of coal gas made in Massachusetts during the past 56 years, but three deaths are known to have taken place from its inhalation;

"When it is asserted by the promoters of water gas that it can be made at from 25 to 30 per cent. less than coal gas, without any reliable evidence of the fact, and with contrary statements from skilled gas engineers;

"When it is found from the tables of the Brooklyn Board of Health that gas is sold by 446 coal gas companies in the United States, at an average of $2.68 per thousand cubic feet, and by 120 water gas companies, at an average of $3.73½ per thousand cubic feet;

"When it is shown by experts that water gas can be made so as to come within the 10 per cent. limit of the Massachusetts law;

"When there is no evidence that competition with water or other gas has permanently lowered the price; but, on the contrary, it is found that the ultimate result has always been to raise the price;

"And when it is shown that water gas in New York is sold for $2.25 per thousand feet, and that coal gas in Boston is sold for $1.80—we submit that no reason has been shown why a law made for the protection of our own community should be repealed for the benefit of speculators from other States."

"WM. A. HODGES,
"JAS. O. PARKER,
"On the part of the Senate.
"J. B. JUDKINS,
"On the part of the House."

Adverse to Opposition in Washington, D. C.

On April 9, 1884, Representative Shelley, acting on behalf of the House Committee on the District of Columbia, presented a report detailing the reasons why, in the committee's opinion, a charter should not be granted to a corporation styling itself the "Gas, Electric Light and Fuel Company." In the April 16th issue of the JOURNAL we noted that this last case was the twenty-sixth opposition attempt to get into Washington, all of which, as they should rightly be, were defeated. The committee's report presents unimpeachable grounds for the action taken, and disposes of the question in the following manner:

"The Committee on the District of Columbia, to whom was referred bill No. 1,034, beg leave to present the following report:

"The bill provides for the incorporation of another gas light company in this District besides the two already in existence—one in Washington and one in Georgetown (now called West Washington).

"As Congress has by law provided complete and rigid regulations for the control of existing gas light companies, and possesses the power to alter and amend such regulations from time to time, having power under the terms of the charters to fix the price, increase the power, and improve the quality

the gas, it would, in the opinion of the committee, be unwise to grant this third charter.

"So far as we have been able to obtain information the gas furnished to the people of the District gives general satisfaction both as to purity and power. The price is much below the average at which gas is furnished in other cities of equal size where the facilities for manufacturing cheap gas are quite as good as those in this District.

"Ordinarily it is true that competition cheapens productions, but in the manufacture of gas, under such regulations as exist in the District, a reduction of cost can be made by allowing existing companies to occupy the entire field and enlarge their business in accordance with the growth of the city. The larger the amount of business they do the cheaper they can furnish the gas.

"As Congress has authority to fix the price and regulate all matters connected with existing companies, all evils complained of can be corrected by Congressional enactment.

"In addition to these facts, the establishment of other companies would involve costly and vexatious changes in streets already constructed, interfering in many cases with traffic and travel.

"The history of gas-light companies shows that no machinery of law has been devised which can prevent the purchase of one company by the other, or a division of their field of operations; so that though competition may temporarily reduce the price, it invariably leads to an increased cost to the consumer in order to pay for the unnecessary outlay of capital.

"This is so well known in Europe that London is the only city where more than one gas-light company is allowed.

"For these reasons your committee report this bill with the recommendation that it do not pass."

On the Composition and Destructive Distillation of Coal.

At an ordinary meeting of the Institution of Civil Engineers (England) held early in April Mr. William Foster, M. A., F.C.S., read a paper entitled, "Experiments on the Composition and Destructive Distillation of Coal." The author first detailed the chemical composition of six samples of coal raised in different parts of the United Kingdom, and of widely different characters. One was a specimen of Scotch cannel; a second a specimen of English cannel; two from Yorkshire; one from Durham; and one was Welsh anthracite. The samples were of good repute, either for the manufacture of illuminating gas or of foundry coke. The amounts of each and all of the elementary components were given in the form of tables. Each sample was then submitted to the process of destructive distillation, and the coke produced was then fully analysed, the same details having been worked out as in the case of the parent coals. The connection between the composition of a sample of coal and of the coke which it furnished was thereby elucidated. In this way some instructive details were brought to light.

The relation between the amount of sulphur present in a particular sample of coal and that remaining in the coke was then discussed, and a table was given showing the amounts of sulphur evolved by the respective coals when treated as in the manufacture of coal gas. In all the cases under notice the amount of sulphur remaining in the coke was less, and occasionally considerably less, than that present in the parent coal. It was remarked that this was in opposition to the generally received opinions on the subject, which were to the effect that one of the drawbacks to the use of coke as a domestic fuel arose from its containing more sulphur than raw coal.

The behavior of the nitrogen of each of the samples of coal was discussed at great length, so that the paper formed a continuation of the author's earlier researches on this branch of the subject. The chief interest centered in the nitrogen remaining in the coke, which was shown to contain from 50 to 66 per cent. of the original nitrogen of the coal. The amount of the nitrogen of the coal, coming off as ammonia during the process of destructive distillation, was also given for the different samples, and estimates were furnished of the amount coming off as cyanogen during the same process. By the author's methods of experiment, a considerable proportion of nitrogen was still unaccounted for, which he believed to exist partly in the tar in the form of alkaloidal substances, but principally as free nitrogen in the coal gas. The paper then dealt at great length with the question of recovering the nitrogen of coke as the valuable product ammonia, and showed how this might be effected by the action of steam at a high temperature. By "gasifying" coke, in the manner stated in the paper, until it lost a little more than 40 per cent. in weight, more than 60 per cent. of the total nitrogen of the coke was evolved as ammonia gas. In other words, 100 tons of coke, when submitted to this limited influence of steam, furnished ammonia equal in amount to 4 tons of ammonium sulphate.

The author then discussed the bearing of these researches, on the question of supplying gaseous fuel for industrial purposes. Coke was frequently, owing to local circumstances, and varying conditions of the weather, almost unsalable in certain districts. By converting it into gaseous fuel of the highest thermal value, through the agency of steam at a high temperature, a considerable proportion of the nitrogen of the coke might be simultaneously obtained as a by-product. In the course of the treatment with steam, the sulphur of coke made its appearance in the form of sulphuretted hydrogen, a condition most favorable for its ready and profitable removal from the gaseous fuel. It this way it was suggested that a sulphur-free product could be obtained which could not fail to commend itself if supplied for use in such industries as those of Sheffield and Birmingham. Allusion was made to the fact that it was twenty years since the late Sir William Siemens applied gaseous fuel to the heating of the retorts of the Paris gas works, with perfect success. A similar application in this country had not been known for more than three or four years. Some calculations were made of the thermal value of the gaseous fuel which it was proposed to manufacture; but they were extremely brief, and related to the figures obtained in the course of the experiments.

Special English Correspondence.

Communicated by Norton H. Humphrys.

London, April 10, 1884.

With the approach of the spring and summer season, in several towns the managers of gas works are arranging for the holding of exhibitions of gas heating stoves, cookers, and other appliances, with the object of bringing the uses of gas for purposes other than lighting prominently before the notice of their customers. These gas exhibitions are a modern growth of gas enterprise, having only been generally taken up by the proprietors of gas undertakings within the last few years. At earlier periods endeavors have been made to hold exhibitions of gas stoves. One was promoted in London about the year 1850, principally by gas-fitters and manufacturers. But these early attempts were almost abortive, probably on account of the defective nature of the apparatus shown, as well as the small variety of such then existing. The modern exhibition of gas appliances was inaugurated by one held at South Shields (Yorks) under the auspices of the South Shields Gas Company, which was attended with such a measure of success that the general attention of gas managers was attracted to this novel method of obtaining new business, and they are now become so common that there remain few towns of importance in England where such have not been held. The general opinion is decidedly in their favor; though I have heard it alleged, by those whose experience in the profession entitles them to speak with authority, that the advantages expected to be attained by these exhibitions might be gained by cheaper and better means. Primarily the undertaking is an advertisement. Advertising may be done in a great many different ways; but it always means an expenditure of money. Therefore, before undertaking an exhibition, it is very desirable to consider, in connection with the estimated cost, the advantages to be gained, and whether there is a cheaper or more efficient way of obtaining them. On this point the experiences of those who have held exhibitions some time since, and have consequently practically experienced the results, are valuable. I find that those who object to the expense and trouble connected with exhibitions of gas appliances are those who have not tried them; and am assured by correspondents, in various parts of the country, who have held exhibitions, and consequently had opportunities of ascertaining the advantages in the way of increased business that are thereby brought about, that the expenditure so incurred has been amply recouped, and was a judicious investment.

The expectation has been very general that these exhibitions would lead to an increased consumption of gas during the summer months. It was thought that gas stoves would be more generally used during that period of the year when the ordinary kitchen fire was not required for warming, and thus that the consumption of gas during the summer months would increase at a greater ratio than that during the winter. The advantages that would follow the realization of these anticipations were set forth by Mr. Henry Woodall, of Leeds, in a paper read at the meeting of the Gas Institute, in 1881. Every gas works must be sufficiently extensive to be able to meet the demand during the darkest days of the year (which, in this country, come in the latter half of December), and consequently the plant is inadequately employed, portions remaining entirely idle, during the principal part of the year. As, in human affairs, the active part must pay for the idle part, so if the proportion of the latter can be reduced, an all-round advantage will follow. If the summer consumption could be increased, without affecting that during the winter, a larger business could be done with the same quantity of plant, by reason of being less idle and doing nothing in the summer, and the charge on each 1,000 cubic feet of gas sold would be diminished. Increased use of gas has certainly followed; but it has not been "summer" but "all the year round" increase. Not only are the cooking stoves, when once adopted, found useful in winter as well as summer, but attention has been attracted to the value of gas as a heating agent, resulting in an increased demand for gas heating stoves, which, of course, are only used in cold weather. This is sufficient to balance any proportionate increase of con-

sumption during the summer, due to the extensive use of the cooking stoves during that season of the year. Consequently, the proportion between the maximum daily and the annual consumption of gas remains but little affected so far as concerns stoves for summer use. But it has been proved, by practical experience, that these exhibitions induce an increased demand for gas stoves —and also, where the price of gas is not more than 3s. 6d. per 1,000 cubic feet, the increase of consumption due to the adoption of gas engines by small users of power has assumed important proportions—and thus have the effect of adding, to the existing business, an equable all the year round consumption.

This has, to some extent, the desired effect of inducing a decrease in the quantity of plant required as compared with the annual sales of gas. Take the case of a gas works selling 100,000,000 cubic feet per annum, and having a maximum daily consumption of 500,000 cubic feet. An additional demand for 50,000 cubic feet daily throughout the year would increase the annual consumption to 118,000,000, and the maximum daily consumption to 550,000 cubic feet. So that although an increased business of 18 per cent. on the year follows, it would only be necessary to increase the plant so as to provide for 550,000 cubic feet per day to the extent of 10 per cent. Increased summer consumption would be the more advantageous; but although the exhibitions have failed to obtain this, the general experience has been that they have secured a substantial increase of day consumption, which, as shown by the above example, is of sufficient value to be worth a little expenditure.

It may be well to point out a few defects, observed in the course of personal visits to most of the principal exhibitions that have been held in this country. In some cases the management appear to have fallen into the error of supposing that, like Noah's ark, their exhibition must comprise a specimen of every kind.

The result has been a vast collection, which fails to have the desired effect; it bewilders the visitor rather than instructs him, and apparatus presenting points really worthy of notice is crowded out of observation by a quantity of very ordinary articles. Gas consumers do not want to be turned loose into a forest of gas stoves and allowed to pick out that which they like best; they require to have the best looked out for them, and, in most cases, brought close under their noses. Sometimes all the exhibitors have the privilege of showing their apparatus in action, and then, unless special proper arrangements have been made in the way of ventilation, the visitor finds himself in a hot atmosphere reeking with moisture, and highly charged with fumes of burnt fat, scorched varnish, and escaping gas; which may be reasonably calculated to cause him to make haste out (vowing that no "stinking gas stove" shall have a footing in his house) rather than remain to be interested and attracted to a careful inspection of the exhibits. Again, the exhibition may have been openly advertised, apparently on the principle of "the more the merrier," with the result of bringing forward an unnecessarily large number of exhibitors—placing the promoters in an awkward dilemma, for it is difficult to refuse any applicant, coming forward under these circumstances, without incurring the odium of unfair favoritism. In some instances it is strikingly evident that the exhibitors think more about effecting sales than of explaining their exhibits. The visitors cannot inspect anything without being invited to purchase, and it is not an exhibition, but really a bazaar.

The majority of these defects have been remedied in the more recent exhibitions. Experience teaches, whether it be our own or that of others, the most successful undertaking of this kind is the one in which the promoters have beforehand decided the kind of business that there is scope for cultivating, and arranged the exhibits accordingly, taking care to have a single representative of each variety and size of apparatus, but that description the best of its kind. Instead of allowing each exhibitor to send his own representative (who is really merely a good salesman, in no way qualified for fulfilling the proper duties of an attendant), most of the apparatus shown has been purchased or hired for the occasion by the promoters, and the attendants are selected from their own staff. As regards ventilation, a first-rate opportunity is afforded for exhibiting the capabilities of gas. Proper outlets for foul air having been provided in the ceiling or upper part of the hall, fresh air may be pumped in by a fan or exhauster worked by a gas engine, or some of the numerous varieties of ventilating gas stoves may be shown in action.

Exhibitions have already been held this year at Cheltenham and Darlington; also at Evesham, High Wycombe, Stowmarket, and other towns. A special feature in the second named was a series of lectures on cookery, illustrated by practical examples with apparatus selected from the exhibits, delivered by an eminent lady professor of the culinary art. Both at Cheltenham and High Wycombe skilled teachers of cookery were also engaged, for the purpose of giving practical demonstrations with the apparatus exhibited, and in each case every facility was afforded for showing the quantity of gas used, so that the visitors could, if so inclined, make their own calculations as to cost, etc. In each case these exhibitions appear to have been successful in creating a demand for stoves and engines, and in attracting a large number of visitors.

Before leaving this subject, there is one point deserving of notice, and this is the great use that these exhibitions have been to makers of gas stoves, etc. Sometimes competitions have been held and prizes given to the owners of the most economical or efficient apparatus. But, apart from this, the submitting of apparatus for exhibition is something similar to placing it up for public criticism. It finds its level as compared with others of the same kind. Indeed, the maker might derive more useful information by minding his own stall, and encouraging free criticism from the visitors. In addition, makers are able to look round the exhibition themselves, and notice the defects or advantages of their own exhibits as compared with others. It is a fact that one result of these exhibitions has been a great improvement in the design and finish of gas appliances. They have also stimulated invention, leading to the production of apparatus adapted to every imaginable purpose. Defects that for a long time told against the adoption of gas for heating, cooking, or motive power have gradually been remedied. Thus the general condition of the gas industry is benefited, and, with the increased consumption, reductions of price are rendered possible, which still further increase the demand, and also enhance the security of the gas undertaking.

The recent agitation on the subject of artificial light, in connection with the capabilities of electricity for furnishing the same, has had the effect of directing the attention of scientific bodies generally to the many processes of interest from a philosophical point of view, that are comprised in the manufacture, purification, distribution, and combustion of coal gas. Until within the last year or two the coal gas industry was almost entirely neglected by these bodies. Indeed, speaking generally, it may be laid to their charge that the important subject of applied science did not receive the attention it deserved. Fortunately this state of things is now being remedied. Within the last few months papers bearing directly upon one branch or another of gas engineering have been read before each of the principal learned societies, and the Chemical Society, the Society of Arts, as also the Society of Chemical Industry, may be specially named. This cannot be regarded as other than satisfactory, for there are many ways in which the assistance of men of science will prove helpful to the progress of our industry. There are many little matters which the busy engineer or manager has not time or opportunity to investigate, and some of them can only be adequately dealt with in the laboratory of an experienced scientist. The papers and discussions at the meetings of these societies have the effect of bringing out suggestions, possibly raw, crude, and even apparently impracticable, but which sometimes arrest the attention of inventive men, and form the nucleus of a useful appliance or process. The kind of papers that have suggested these remarks may be instanced by mentioning two—"The Influence of the Temperature of Distillation on the Composition of Coal Gas," read before the Chemical Society by Mr. Lewis T. Wright, manager of the Nottingham Gas Works, and "Gaseous Fuel as Applied to the Heating of Gas Retorts," by Mr. Charles Hunt, engineer of the Windsor Street Gas Works, at Birmingham, read before the Birmingham Section of the Society of Chemical Industry. The former is an account of experiments made in the laboratory on small quantities of coal. The latter also comprises the results of experiments, but on a practical working scale. Both are valuable in their way. It will be observed that both the gentlemen named are practical gas engineers. It is remarkable how scientific gas managers are now becoming in this country. This is instanced by the papers read, and the discussions, at our recent meetings of gas managers. The desire to be thoroughly acquainted with the theoretical principles, as well as the practical details, of the gas industry is deserving of imitation, and will tend to advance and benefit the profession.

The subject of selling coke by weight, in preference to measure, has lately been discussed at length in the correspondence columns of the *Journal of Gas Lighting*. The original plan was to sell it by measure, using the bushel and chaldron, also the "sack" of three bushels. But lately the plan of selling it by hundredweights and tons, as coal is sold, has been gaining ground. And it is now suggested that the plan of selling by weight should be universally adopted. One correspondent points out that the weight of a bushel of coke will vary considerably with its age and the circumstances under which it has been stored. Another calls attention to the fact that the actual quantity of the coke required to fill the measure will vary with the size of the pieces. The remarkable extent to which coke is reduced in bulk, so far as filling the measure is concerned, by a railway journey, is also noticed. In course of transit it receives a great deal of shaking and jolting, and the disintegration thereby caused makes it "lay closer" than it did before. So many letters have been written on this subject that it is tolerably safe to anticipate a paper upon it at the next meeting of the Gas Institute. Prices being equivalent, the interests of the purchaser are best suited by measuring fresh coke and weighing old coke. On the whole, the advocates of the scales and weights appear to have the advantage of the supporters of the bushel basket.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

Price of Gas Reduced at North Adams, Mass.—The North Adams (Mass.) Gas Light Company has officially announced that from and after April 1 the prices charged for gas would be based upon the following schedule. The former all-round rate of $3 (less 10 per cent. discount) is reduced to $2.50, and all bills paid at the office of the company, on or before the tenth day of each month, will be allowed a discount of 5 per cent. on a consumption of less than 20,000 cubic feet, bringing net cost down to $2.37 per thousand. A monthly consumption of between 20,000 and 50,000 cubic feet entitles consumers to a rebate of 10 per cent., or a net price of $2.25 per 1,000. A consumption over 50,000 feet per month will be charged for at the rate of $2.15 per thousand. Mr. Frank S. Richardson, Treasurer of the company, in his circular to the consumers, says: "These terms are made to secure to the town an exceptionally low price for gas, and to insure prompt settlement of bills, also, in order that the company may increase its sales. Besides the new and lower rates, there will be no further charge for use of meters, and the illuminating power of the product is to be increased to over 18 candles. The company has adopted the policy of guaranteeing to make future reductions whenever the community, by its more general use of gas, insures consumption that will warrant the change.

"To any one who uses a gas stove, and burns in such stove 1,000 cubic feet of gas per month, a discount of 10 per cent. on the above terms will be given. Call and see these stoves, and learn of their beauty, convenience, and economy."

We are more than glad to enroll the North Adams Gas Light Company on the list of "reducers," and congratulate Treasurer Richardson and his brother officers upon their action. It may appear to some that the rates in future to obtain are none too small; but it must be borne in mind that North Adams is not the largest town in Massachusetts, and it should also be remembered that Treasurer Richardson's circular distinctly promises to keep up the policy of cheapening the price whenever the gas consumers of the district, by a liberal consumption, do their part towards making the plan possible.

The North Adams Company was incorporated in 1864, and has a capital stock of $50,000. The officers of the corporation are Messrs. W. L. Brown, President; J. B. Tyler, Vice-President; Frank S. Richardson, Treasurer; Arthur D. Cady, Secretary; L. W. Woodward, Superintendent. In our issue of March 3, it was noted that the North Adams Company intended to reduce its selling prices, and the proposed figures were published at the time. A little further consideration of the subject, by the directors, resulted in amending the schedule to the rates printed above—the alterations, however, as between the March proposition and the April official announcement not being of a very radical character.

Notice of Removal.—Mr. George Shepard Page has removed to new quarters, and is now located at No. 69 Wall Street, New York city.

Cheaper Gas for Staten Island, New York.—The Richmond County Gas Light Company, of Staten Island (N. Y.) reduced the price of gas, from and after May 1, to $2.25 per 1,000 cubic feet. Prior to the new departure $3 per thousand was the selling rate.

From Darkness to Light.—We are indebted to Mr. E. G. Pratt, Superintendent of the North Attleboro (Mass.) Gas Light Company, for the information that the town authorities have partially gotten back a portion of their long lost discretion. We judge this to be so from the fact that gasoline lamps are no longer to play a prominent part in street lighting operations in that locality, the authorities having ordered, on April 14, that the North Attleboro Gas Light Company be instructed and empowered to furnish gas to the lamp-posts and lanterns wherever such happened to be on the company's line of mains. Satisfied of their former error the Council also placed in the gas company's charge the care and maintenance of such oil lamps as found necessary to be still employed in the outlying districts—that is, in such portions of the territory to which Attleboro's main pipes do not now reach. While on the subject of gasoline lamps for street lighting purposes, it has often been wondered at why the municipal controllers in some portions of the State of New Jersey persist in adhering so closely to this beastly class of street lighting. No other word (perhaps some of our scientific readers may be enabled to trace more "venom" in this) than beastly explains the real features of the gasoline system of street illumination, or rather "dis-illumination." A wretchedly red, spluttering, hissing flame that does not throw a ray of light to the ground, along with the fact of the intolerable stench constantly and impartially emitted from the apparatus, is supposed, by the Jersey committeemen, to answer the purpose of sufficiently lighting the streets, and all because an insignificant sum of money may be annually saved (?) to the various treasuries. If they could only be made to see the truth of the case, their action has turned thousands of dollars away from the improvement of real estate in New Jersey's cities and towns—and which improvements would have added, in taxes ten times over the difference in cost between the disgusting gasoline lamp and the pleasing gas light.

Something from Washington, Pa.—Mr. John C. Hastings, Secretary of the Washington (Pa.) Gas Light Company, sends us an item which is rather positive proof of his ideas as to the prices at which gas ought to be sold. Washington has about 5,000 inhabitants, and the gas company there finds it profitable to sell gas to ordinary consumers at the rate of $1.50 per thousand, and supplies the borough, county, and *other* large purchasers at $1.30. The Washington Company has 300 meters set, and maintains forty-eight public street lamps, at an annual charge of $15 each per annum. This very low rate to ordinary consumers was instituted in February last, and Mr. Hastings had reason enough since to conclude that the move was taken "wisely and well."

A New President for the Fulton Municipal Gas Company.—Mr. H. M. Benedict has resigned from the Presidency of the Fulton Municipal Gas Light Company, of Brooklyn, N. Y., and Mr. Henry H. Rogers, one of the "shining lights" of the Standard Oil Company, has been elected to the position thus made vacant. It is supposed this move must be taken as further evidence that the Standard Oil Company was and is in no manner or shape connected with the gas supply of the City of Brooklyn. Having accomplished what it started out to do, the "Standard" concern is evidently anxious that the measure instituted in the New York State Senate, by Senator John C. Jacobs, requiring future Brooklyn gas undertakings to obtain consent of a majority of property holders along the proposed lines of mains before operations can be started, shall become a law. The Standard's definition of the rights attendant upon opposition gas schemes appears to be very similar to that of a certain foreigner's definition of freedom—of course, it goes without saying that the foreigner was a Celt. When asked to explain his ideas of freedom, he promptly replied, "Faith, 'tis easy to answer that. True freedom consists in the privilege of doing what pleases yourself, and in being backed up with the power of preventing anyone else from exercising the same right."

How the English Enforce the Petroleum Acts.—In the early part of April last, at the Clerkenwell (London) Police Court a clever instance was given of how the petroleum laws are enforced in England. Laws placed on the English statute books, seeking to protect the life and property of the citizen, are not merely idle forms, prescribing penalties which are never to be carried out. The case to be described is reported in the *Ironmonger*, and was about as follows: One W. Goudge, a lamp maker, in business in Whitecross street, St. Luke's, was summoned at the instance of the Metropolitan Board of Works for having unlawfully had in his possession a quantity of petroleum larger than permitted by the Act. From the evidence of an Inspector named Ross, it appeared that an iron can, containing five gallons of naphtha (which is petroleum within the meaning of the Act) was found in the defendant's shop. Defendant contended that he was unaware that this was contrary to the law, and added that the naphtha was "safer" than called for in the flashing-test (73° F.) It was, however, found to ignite at 55°, which showed it to be very dangerous. It was, moreover, kept in such a way that the gas from the oil could escape from the top of the can. Justice Hosack found defendant guilty, and imposed a fine of £5, with 2s. costs. Our statutes concerning these dangers are specific and just, and, if promptly attended to, we would hear less of such disasters, a fair example of which was given in the February 16 issue of the Journal, when detailing the fatal gasoline explosion at Alliance, Ohio.

English Sulphate of Ammonia Market.—The English sulphate of ammonia market looks and acts much better than has obtained for somewhile previous. Indeed, there have been recorded sales at the notable advance of £2 per ton—or about one-half cent per pound. Transactions took place at £15 10s. per ton, and the on-hand March stocks were entirely closed out. Nitrate of soda, the phenomenal cheapness of which exerted such a depressing effect on sulphate values, with the termination of existing lines of contracts outstanding (it is positively asserted that some of these contracts entailed large losses to operators in nitrate), will doubtless advance considerably in the market quotations. Latest advices show less favorable conditions.

Electric Wires Cause a Fire in New York City.—The electricians, or, more properly speaking, the promoters of electric lighting schemes, claim that wires carrying the electric current are not especially dangerous to life and property, and have time and time again advanced this argument as reason why they (the promoters) should not be obliged to incur the heavy outlay of burying their conductors. While the particular conflagration here considered may not be strictly charged as being caused by the agency of an overhead wire, it only goes to show that, unless each and every portion of

electric lighting plant, as at present constituted, is carefully watched, there is constant liability to danger and accident.

On April 21st a fire started in the basement of the two-storied brick building at Nos. 7 and 9 Elm street, New York city. The cellar and basement floors are occupied by the United States Electric Light Company, the upper portion of the building containing the works of the New York Paper and Felt Company, as also the machine shops of J. W. & B. C. Sheridan. The Fire Marshal reports cause of the blaze as happening from an electric wire coming in contact with some paper. The losses were apportioned as follows: Electric Light Company, $1,000; paper and felt mills, $5,000; Messrs. Sheridan, $1,200—a total of $7,200.

Natural Gas Wells.—The great natural gas basin in the vicinity of Wheeling, West Va., is yielding tremendous volumes of natural gas, the only difficulty experienced by drillers being the eccentricity of the vein courses. On April 24, at Wellsburg, the vein was struck at a depth of 1,285 feet, and the latest "find" is claimed to be the greatest on record. The discovery is the property of Dalzell Bros. & Gilmore, who propose to utilize "nature's fuel" as a heating adjunct to, if not entirely to the total exclusion of, solid fuels in their glass annealing furnaces.

Toronto Street Lighting.—In the last issue of the Journal reference was made to street lighting contracts about to be entered into by the Toronto authorities, and when the awards were made, based upon the proposals submitted, we promised to note the fact. The City Council arrived at a conclusion sooner than was expected, and Mr. William H. Pearson, of the Consumers Gas Company, has promptly informed us of the action taken. Mr. Pearson's statement is as follows:

"Toronto, Ontario, April 26, 1884.

"Editor American Gas Light Journal—Dear Sir: As you were good enough to refer to our street lighting contract in your last issue, and stated that you would recur to the subject again, I send you with this an extract from the report adopted by our City Council, on the 15th inst., from which you will perceive that they decided to award us a contract for five years on terms of our tender. As our tender was based on a *ten* years contract, the matter was laid before our board of directors on Monday last (April 21), when they decided to accept the modified (as to time limit) award. As you remarked, the contract is a very liberal one to the city, when all things are taken into consideration; and this they evidently recognized by accepting it, without opposition, exactly in terms proposed except as to duration. The Committee on Fire and Gas recommended that a contract be entered into with the Canada Electric Light Company (for electric tenders, see issue of April 16) for one year, at 62 cents per light per night. This recommendation was, however, amended in Council, as per report given below. The Canada Electric Light Company furnish illumination under the Van Depole system, and the Toronto Electric Company operate the Hochhausen system."

Extract from Report No. 5 of the Committee on Fire and Gas, as amended and adopted in Toronto City Council, April 15, 1884:

"Your committee beg leave to report that they have received three tenders for the lighting of the streets of the city—viz.: The Canada Electric Light and Manufacturing Company, the Toronto Electric Light Company (limited), and the Consumers Gas Company.

"It is recommended that each electric lighting company be requested to set up 25 lights, to be tested for a period of three months, the company not making the best showing, to the satisfaction of the corporation, to withdraw from the contract; the amount paid both companies to be 62 cents per light per night; the test to be commenced on or before the 15th day of May next.

"It is estimated that the fifty electric lights proposed to be erected will supply the place of about 350 gas lamps, which will add 90 cents to the cost of each lamp lighted by the gas company, making the cost thereof $23.40 per lamp per annum for the ordinary lamps used, instead of $22.75, as at present. It must, however, be borne in mind that hereafter the lamps will be lighted each and every night during the year. The gas company also tender for lighting the streets for a period of not less than ten years, but your Committee do not deem it to be advisable to execute a contract for such a lengthened period, considering the many improvements likely to be made in connection with the electric light, and the probable reduction in cost They would therefore recommend that the contract for gas be awarded to the Consumers' Gas Company for five years, as per that company's tender, the light to be 3½ feet burners as per said tender; in the event of the 50 additional electric lights being required, an allowance to be made to the gas company in terms of scale in tender.

"Provision to be made in the contract with the electric light company for the erection of additional lights from time to time on receipt of notice from the city, should it been deemed advisable, on the same terms and conditions as mentioned in their tender, and in that of the gas company for payment by the city to the said company of the additional charges, according to the number of lamps discontinued."

Mr. Pearson's company has acted fairly and squarely all through this business and will now reap the benefit of the action taken. It is with pleasure we are called upon to say that the Toronto City Council also deserves commendation. This body, unlike other municipal assemblies, does not seem disposed to rush into electric lighting schemes without first having obtained some tangible result to work upon; and, should the Toronto and Canada Electric Companies accept the conditions imposed by the Council, the outcome of the experiments would be awaited with considerable interest, and the citizens have the benefit of not being obliged to hazard any guess as to which system would the better for their money. Without desiring to anticipate what the final verdict shall be, we will still hazard the prediction that the Hochhausen system carries the day—provided the competition is entered into under the Council's arrangement.

The "Venemous" Gas.—Mr. and Mrs. H. S. Fillmore, residents of Manlius, near Fayetteville, New York, while on a visit to Chicago, Ills., stopped at the Palmer House in that city during their sojourn. The couple are said to have been pretty well advanced in years, and somewhat feeble in their movements. They retired to bed at about 10 o'clock on night of April 18, and their non-appearance was not made matter for comment until noon of the following day, when a porter was sent to see if anything had happened them. The room door being locked, was forced open, and the inmates discovered in an unconscious condition; the apartment was filled with gas, which had escaped from three fully turned-on burners. Mr. Fillmore was found lying face downwards on the floor, having apparently rolled out of the bed, while his wife was evidently in the natural position of one who had retired to rest and had not been disturbed. Three physicians were summoned who put forth extraordinary efforts, applying every restorative agent known to medical science, but without success, as was supposed at the time. Mrs. Fillmore was really dead, and the first report received stated that Mr, Fillmore had also given up the ghost, and here is the most curious part of the case. Certain formalities looking to procurement of a permit to remove the bodies out of the State of Illinois (they were to be brought for interment to Manlius, New York) caused delay, and, in the interim, evidence of life developed itself in the supposed cadaver of Mr. Fillmore. Renewed effort of the physicians succeed in restoring him to consciousness, on April 22, three days after period of first discovery; but the unfortunate man was in such condition that his entire collapse was looked for momentarily. We have no further advices than those of that date. On Friday, March 14, it may be remembered that a guest at the Palmer House lost his life from inhaling gas. When this hotel was illuminated with coal gas, which was the case until the Consumer's Company commenced supplying it with their product, there is no record of a fatal case of gas poisoning.

A Death from Gas Poisoning at the Brevoort House.—Our friends, who do not relieve themselves of any venom (for an explanation of the venom reference, see the *Sanitary Engineer*, date April 17, page 478, col. 3) have rather broadly and loudly claimed that deaths from inhaling water gas (when such deaths happen to occur in hotels) are only recorded in hotels of the lower class, frequented by ignorant people, or country folks not aware of the danger incurred when indulging in the primitive method of "blowing out the gas." We suppose, in general, it is safe to maintain that the ignorant and the poor value life just as highly, and enjoy, in their own way, its pleasures as greatly as do their more fortunate brethren the learned and the rich. The Brevoort House is one of the most elegant hotels in the city of New York, is frequented by the very best class of customers, and is located on Fifth avenue. Mr. George E. Ewing was found dead in his bed there, on the morning of Saturday, April 26; the coroner's jury subsequently impanneled, after listening to the results of a post-mortem examination made upon the corpse, gave it as their verdict that death had been caused from asphxyiation. Mr. Ewing was a sculptor of considerable note, a Scotchman by birth, and had a studio on Filbert street, in Philadelphia, Pa.; he was a warm personal friend of Mr. Henry Irving, the world-renowned English actor and playwright, and was the guest of this gentleman during his stay at the Brevoort House. Mr. Ewing was engaged on perfecting alto-relievo models of Mr. Ewing and Miss Ellen Terry, hence his presence in New York. Without further comment we will here reproduce a portion of the New York *Daily Herald* account of the sad case:

"At half-past two o'clock (Saturday morning, April 26) Mr. Ewing stepped up to the hotel desk, and after exchanging a few careless remarks with the clerk sauntered off to his room. At half-past nine o'clock a chambermaid who had instructions to awake Mr. Ewing at that hour knocked at his door. Repeated rappings not eliciting any response, she surmised that something was wrong and looked over the fanlight. Mr. Ewing's appearance confirmed her suspicion and she ran down stairs and notified the clerk in the office.

"The door of Mr. Ewing's bedroom was at once forced, and as it was thrown open a strong smell of gas was detected. The occupant of the room

was found lying on his side with a copy of the *Evening Telegram* beside him. He was still breathing, and Dr. Partridge, a neighboring physician, was quickly summoned. Mr. Ewing, however, died within a few minutes after the doctor's arrival.

"A gasalier hung in the center of Mr. Ewing's room, furnished with three taps. One of these taps was turned off and the second was burning low. The third, however, was turned on nearly to the full, and it was from this point that the fatal stream of gas had escaped. It is surmised that in turning down the second tap Mr. Ewing struck his hand against the other tap, thus unconsciously turning it on. He must then have fallen into a heavy sleep without becoming aware of the escaping gas. In his pockets were found a number of letters, all relating to business matters."

THE NEXT CASE TAKES OFF ONE OF THE "IGNORANT" CLASS.—To show its evident impartiality, and entire obliviousness to class, creed, or color, the carbonic oxide destroyer performed its silent fatal mission on the same night (Saturday, April 26) in a caravansary not quite so noted for the elegance of its appointments, nor for the fastidiousness of its guests, as is the Brevoort House. The Summit House is located at the corner of Bowery and Canal streets, New York city, and many cases of fatal gas poisoning have occurred within its walls. The last to go on record is that of a man named John Ford, about 36 years of age, who had engaged a room at the hotel a few days ago. On the morning of the 27th a porter, while passing Ford's apartment, noticed a strong odor of gas. He forced open the door, and found the unfortunate man lying dead on his bed. The gas had escaped from a "turned-on" burner attached to a wall-bracket gas fixture. Coroner Merkle decided that death was due to asphyxiation. The *Herald*, in its account of the matter, charitably adds the insinuation, "It is not known whether Ford committed suicide or died by his own carelessness."

BIDS FOR COAL FOR THE GAS TRUST, PHILADELPHIA, PA.—The Committee on Works of the Philadelphia Gas Trust, on April 25, opened bids for the coal supply of the ensuing fiscal year. Bids were solicited for the whole or any portion of 350,000 tons, the usual right to reject being reserved. The following are the bid prices:

James Boyce, 100,000 tons, at $4.14; Westmoreland Coal and Coke Company, 20,000 tons, at $4.25—with an extra charge of 73 cents per ton when delivered at Manayunk; James Boyce, Gaston coal, 75,000 tons, at $3.94; B. T. Rafferty, 50,000 tons, at $4.24, $4.34 and $4.40, according to point of delivery, and also 100,000 tons at $4.29; Despard Coal Company, 20,000 tons, at $3.97; Newburgh Orrel Coal Company, West Virginia, 50,000 tons, at $3.90; Smith, Huddle & Co., 30,000 tons, at $4.35; G. R. Van Allen, New York, 25,000 tons, at $3.89; Saltsburg Coal Company, 25,000 tons, at $4.21; Chesapeake and Ohio Railroad Coal Agency, 40,000 tons at $4.15; Westmoreland Coal Company, 175,000 tons, at $4.25 and $4.73, when delivered at Manayunk; Penn Gas Coal Company, 175,000 tons, at $4.25, and $4.73, when delivered at Manayunk. The bids were referred to a sub-committee, Messrs. Leeds, Stanton and Gardner, to be scheduled. Comparison of the bid prices with those of last year, when the average figures were $4.60 per ton, shows that the Trust will effect a considerable saving in the item of coal supplies.

A NATURAL COKE DEPOSIT.—The *Revue Industrielle* says that a natural deposit of coke, found while sinking a mining shaft, has recently been discovered in Mexico. The deposit is 1 meter (39.368 inches) in thickness, the vein running between two layers of coal. It is said that the coke has all the appearance and quality of the artificial product.

THE GASHOLDERS OF THE HAVANA (CUBA) GAS LIGHT COMPANY DESTROYED.—About one o'clock on the afternoon of April 29, the powder magazine of San Jose, from some cause not mentioned in the press dispatches, exploded. The shock occasioned was violent enough to level to the ground the holders of the Havana Gas Light Company, and the capital city of the "ever faithful isle" was left in temporary darkness. Further particulars will be awaited with interest.

Correspondence

[The JOURNAL is not responsible for the opinions expressed by correspondents.]

A Correspondent's Views on Hydraulic Main Construction.

DETROIT, MICH., April 22, 1884.

To the Editor AMERICAN GAS LIGHT JOURNAL:

I read with pleasure your valuable suggestions, published in last number of the JOURNAL, upon the paper read by Mr. Stiness with regard to the hydraulic main, and feel convinced that if gas engineers and superintendents put into practice most of them we would hear less about stopped dip and ascension pipes.

The custom of putting the hydraulic main in such close proximity to the tops of the benches is far too prevalent. In my opinion, the hydraulic main should be at least 2½ feet above the bench, and there should be a ½-inch layer of plaster of paris, or some other non-conducting material, underneath the top course of the brickwork. This would greatly assist in getting rid of pitch formation in mains, and help to keep the heat where it is most needed—in the ovens.

A few months ago I visited a gas works, the make of the plant reaching up to about 50,000,000 cubic feet per annum, where the above named plan is in operation. In my conversation with the stokers they hardly seemed to know what a stopped pipe in the retort house was.

The construction or shape of the hydraulic main is also a matter worthy of more consideration than has been paid to it. We still continue using the old-fashioned D, or circular main, leaving a large space, underneath the dip, for the tar to collect upon, and assist in the formation of pitch—as it is only the surface, and a couple of inches below, that are disturbed by the gas. Mr. George Livesey, of London, England, some years ago invented a very shallow and wide hydraulic main, and ran his dip to within 2 or 3 inches of the bottom, entirely preventing trouble by taking the tar away as fast as it was made, not giving it an opportunity to form pitch.

Respectfully yours, E. C.

"E." Further Explains Himself, and Closes his Argument.

To the Editor AMERICAN GAS LIGHT JOURNAL:

Your correspondent "J. S." says I am laboring under "a very serious fallacy—the mistake of supposing that ammonia, *per se*, acts as a purifier." I am laboring under no such fallacy. H_2O is the medium through which the union is effected; but it is not true that the ammonia must be in the form of ammoniacal liquor, as asserted by "J. S."

Ammonium carbonate is manufactured by retorting calcium carbonate with ammonium sulphate, the resulting free ammonia and carbonic acid uniting with the aid of aqueous vapor, and, when condensed, forming solid carbonate of ammonia. Will "J. S." claim that the requisite quantity of H_2O is not present in the condition of vapor up to the time the gas enters the purifying boxes?

"J. S." would have his readers believe that I was surprised at finding ammonia in purifiers after reducing quantity of water in scrubber. What I said would bear no such construction. I reduced the water in the scrubber during the experiments for the purpose of passing ammonia to purifiers. If, as "J. S." says, it is necessary to have the ammonia in the form of liquor, will it not be just as efficient in the purifier that is saturated with water as in the scrubber? Yet, under such conditions, carbonic acid did, and does, pass the boxes.

In one of his communications "J. S." says I might tell how it would be possible for an acid and an alkali to exist together and not combine. I claimed that surroundings and conditions had much to do with increasing or diminishing the affinity of an acid for an alkali. He evidently has come to the same conclusion, as he now tells us that they only unite when the alkali is in the form of liquor. In the concluding sentence of his last communication he goes further, and says that the acid impurities must be brought in contact with the *salts* of ammonia contained in the liquor, in which condition *only* will the acids and alkali unite.

In his communication of Feb. 8th, "J. S." says the stronger the water is in ammonia the more CO_2 and SH_2 it will take up. We usually understand strength, as applied to ammoniacal liquor, to refer to the specific gravity. Now he claims that it is the solutions of carbonate of ammonium and sulphide of ammonium that gave it this strength or specific gravity, which is true, of course. Would "J. S." prefer to wash his gas with 20-ounce liquor, specific gravity 1.100, made so by the *salts* of ammonia, to washing it with water of 0.950 specific gravity, made so by absorption of free ammonia?

If "J. S." does not arrest the solid matter by some form of scrubber, what does he arrest it with? Perhaps he has a better way. If it is no part of the duty of a scrubber to arrest solid matter, but only to absorb ammonia, the vessel has been sadly misnamed. Still, maintaining that, under the conditions obtaining in the manufacture of coal gas, ammonia and carbonic acid do not readily unite, that the union, when effected, is a weak one, and that therefore the high valuation placed on ammonia as a purifying agent, for removal of CO_2, by many gas managers, is not warranted by the results of practice; and trusting that I may have the pleasure of meeting "J. S." at the St. Louis convention in May, I promise not to trouble you with any further communications on this subject. Yours truly, "E."

[We have anticipated, with not a little degree of interest, the meeting at the St. Louis convention of the two gentlemen who have taken part in this controversy—and which controversy has been marked throughout by good feeling, courtesy, and fairness. We have taken strict pains to preserve the incognito of the disputants, and have refrained from making any comment upon the points involved; although we might say right here that the difference between them, in the subject debated, is but slight, and have no doubt that a few words of personal explanation will suffice to make them wonder how they failed to understand one another at the outset.—ED.]

The Market for Gas Securities.

Our prediction of April 16th, that it need not be wondered at if gas shares should go back to the figures recorded early this spring, was verified quite speedily, as a glance at the quotations will show. The New York Gas Light Company paid a 5 per cent. dividend on May 1st, and the Metropolitan Company has declared, and will pay on May 13th, one of a similar amount. Our quotations for both of these securities are given ex-dividend. Certain negotiations now in progress, the details of which are zealously and carefully guarded from striking on inquisitive ears, appear to have every likelihood of being carried to a successful issue; should this be so, New York city gas shares are decidedly good investments, even at present figures.

Brooklyn gas shares are "booming." The small cloud that seemed to hover over the situation respecting final settlement of the status of the Nassau Company, has been dissipated, and a perfectly bright financial horizon presents itself to the gaze of the more than pleased Brooklyn gas shareholder. A calm precedes the storm, and a great many folks seem inclined to the idea that "piping times" may once more cause a tiresome dance in Brooklyn shares. The Brooklyn Gas Light Company pays a dividend of 5 per cent. on May 10.

Washington (D. C.) gas is at 200 bid; Jersey City at 160 to 165. We note a recent sale at auction of 200 shares Cincinnati (Ohio) gas, at 190½, and 400 shares of Bridgeport (Conn.) gas, at 151. Consolidated gas of Baltimore has sold as high as 55¼, but is now somewhat weaker.

Gas Stocks.

Quotations by Geo. W. Close, Broker and Dealer in Gas Stocks (with W. B. Scott & co.,)
34 Pine Street, New York City.
May 2.

☞ All communications will receive particular attention.
☞ The following quotations are based on the par value of $100 per share.

	Capital.	Par.	Bid	Asked
Central	$466,000	50	65	—
Equitable	2,000,000	100	94	97
Harlem	1,800,000	50	120	123
" Bonds	170,000		—	—
Manhattan	4,000,000	50	272	275
Metropolitan	2,500,000	100	230	235x
" Bonds	658,000	—	107	110
Mutual	3,500,000	100	133	135
" Bonds	1,500,000	1000	104	106
Municipal	3,000,000	100	213	215
" Bonds	750,000		107	110
New York	4,000,000	100	154	157x
Northern	125,000	50	70	80
" Scrip	108,000			
Gas Co's of Brooklyn.				
Brooklyn	2,000,000	25	139	141
Citizens	1,200,000	20	92	95
" S. F. Bonds	320,000	1000	106	110
Fulton Municipal	1,500,000	100	140	145
" Bonds	300,000		104	108
Peoples	1,000,000	10	85	90
" Bonds	290,000	—	105	110
" "	250,000	—	90	95
Metropolitan	1,000,000	100	92	95
Nassau	1,000,000	25	105	—
" Ctfs	700,000	1000	85	90
Williamsburgh	1,000,000	50	125	130
" Bonds	1,000,000	—	104	108
Richmond Co., S. I.	300,000	50	—	75

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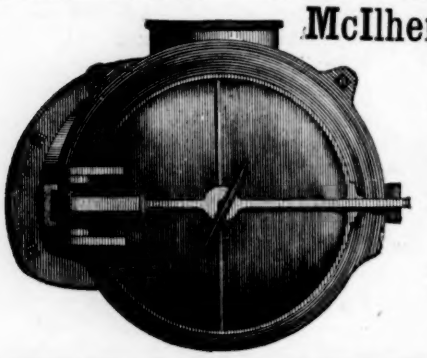
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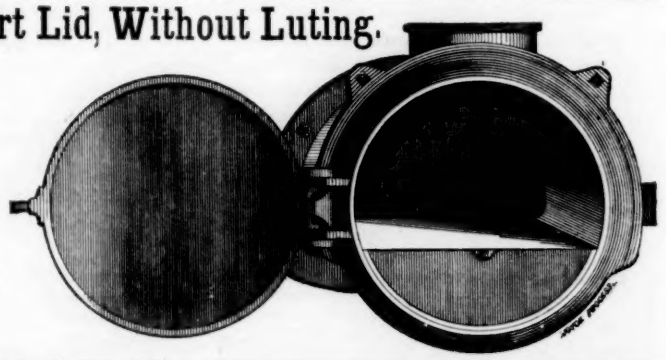

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